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THE IRON AGE

New York, June 26, 1924

ESTABLISHED 1855 VOL. 113, No. 26

Demands Increasing for Reinforcing Steel

Portland Cement Industry Celebrating Its Centennial This Year Now a Large Consumer of Steel in Various Forms

BY L. N. DURYEA

FROM casual consideration, there might seem to be but little significance to those associated with the iron and steel industries in the statement that the shipments of Portland cement increased more than 15 per cent during 1923 over those of the previous year. Yet when it is realized that at least 60 per cent of the total output of the cement plants in the United States—and that means nearly two-thirds of 545,000,000 sacks—goes into construction that entails the use of more or less reinforcing steel, it has more than a passing interest to the producer of steel, and particularly of bars.

Not so many years ago, reinforced concrete construction was still in the experimental stage and it is comparatively recently that iron and steel production figures have listed concrete bars and reinforcing mesh among the leading articles. But within the past few years considerable progress has been made in the designing of reinforced construction with the result that both the cement manufacturer and the steel producer have seen a greater portion of their output devoted to this combined use.

Some of the More Recent Installations of the Rotary Kilns Are Credited with Being the Largest Pieces of Movable Machinery in Existence. The iron and steel work in the rotary kilns 240 ft. long and 11 ft. in diameter will weigh over 800,000 lb.

Concrete construction as a whole showed a large increase in 1923 over the previous twelve months, but no doubt the greatest ratio of gain was in the use of reinforcing wire mesh. In concrete road construction, especially, has the steel industry been called upon for greater quantities of its product.

Last year there was laid in roads and streets in the United States the equivalent of 7490 miles of 18-ft. road—sufficient to build a national highway from Boston to San Francisco, returning by the way of New Orleans and Atlanta. And of this amount nearly 3000 miles was reinforced, requiring about 44,000 tons of reinforced steel deformed bars in its construction.

The United States Geological Survey in its report on the cement industry for 1922, published some figures on the distribution of cement for various kinds of construction. Based on a similar proportion, the 1923 output shows that the construction of public and commercial buildings, requiring some 35,400,000 bbl. of Portland cement, is the dominating factor in the use of this material. And practically all of the concrete in this class of construction is reinforced in some form.

In the concrete construction divided among the railroads, river and harbor developments, dams and water power projects, bridges, storage tanks and reservoirs, it has been estimated that another 11,500,000 bbl. of Portland cement were used. While in all probability the proportion of plain concrete used for these purposes exceeded that for buildings, there is reason to believe that as much as three-fourths of the concrete going into such construction was reinforced by steel.

The development of small concrete products has also opened up somewhat of a new field for the use of reinforcing steel. For instance, in replacing the old wooden silo by one made of concrete staves, steel is finding a field of use little before exploited. And in one county in Illinois where there are 2000 farms there are 2000 concrete silos. Then, too, practically all con-

Last Year the Equivalent of 3000 Miles of Concrete Road Was Reinforced with Bars or Mesh. This use required about 44,000 tons of steel

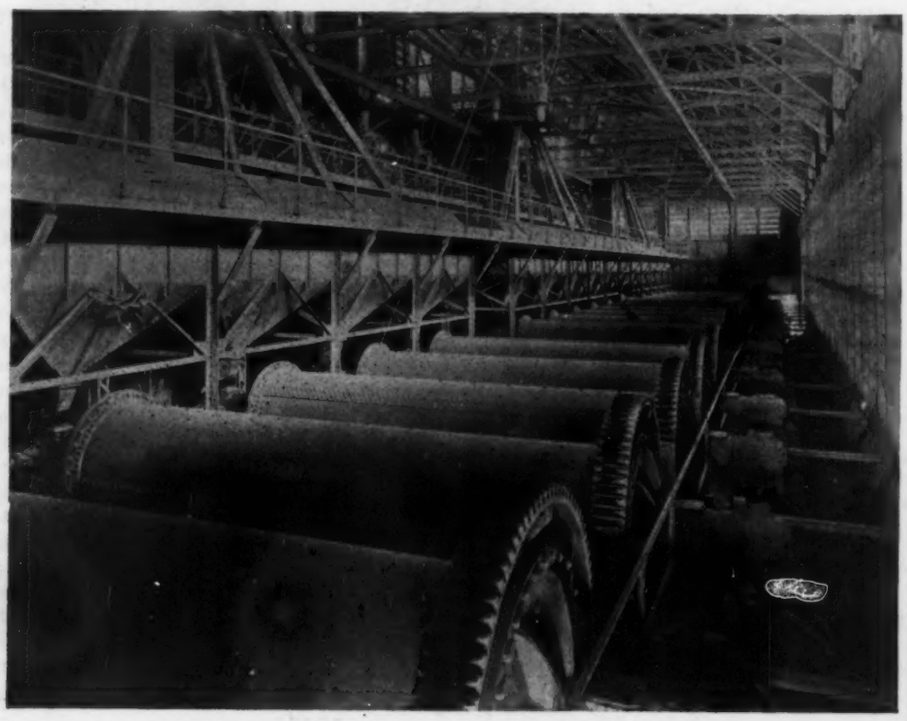
crete pipe above 24 in. in diameter is reinforced with steel mesh and not infrequently the joints are cast iron. Recently a concrete-lined cast iron pipe has found its way into use for water mains—the concrete preventing the incrustation that has been the deteriorating feature of cast iron pipes. In London, England, a pipe of this kind has been in service for transmitting illuminating gas.

The fact that cement production in the United States has increased more than 170 times over in the past 30 years is due in a large measure to the widespread use of reinforced concrete. In 1893 when production first reached the million-barrel per year mark, reinforcing had hardly passed its introductory period, although the first use of reinforced concrete so far as is known occurred some 75 years ago—a quarter of a century after the introduction of Portland cement.

No doubt, the bulk of the demand for iron and steel products in the cement manufacturing process is for the heavy machinery and the repair parts that must always be carried in stock to decrease the expensive shut-downs. In the average cement plant as much as a tenth of the inventoried value of the plant may be invested in spare parts. The wear and tear of the heavy machinery in the grinding and burning processes of making cement compares somewhat with that in a rolling mill—repairs being frequent and break-downs likely to put the entire plant out of operation.

There is perhaps no one industry comparable with that of making Portland cement that requires such heavy machinery as the gyratory crushers and the rotary kilns for crushing the raw materials and burning them into Portland cement clinker. Crushers weighing as much as 450,000 lb. are in use in some plants. The iron and steel work in a modern rotary kiln of 240 ft. in length and 11 ft. in diameter will weigh about 800,000 lb.—the largest single piece of moving machinery in existence. Some of these kilns with their brick lining when operating with a charge of raw materials weigh as much as 10 all-steel Pullman cars.

Twice during the process of manufacturing Portland cement, it is necessary to grind the material as fine as flour. For this purpose, ball and tube mills have been introduced which employ many tons of chilled iron or steel balls to pound the hard material



As Much as 30 to 40 Tons of Steel Balls Are Used in a Modern Two-Compartment Grinding Mill

to pieces. In some of these mills as many as 30 to 40 tons of balls are used and an average sized cement plant that uses this method of grinding exclusively will buy as many as 200 tons of balls annually.

The present year will mark the centennial of the patenting of Portland cement, for 100 years ago an obscure brick mason in the town of Leeds, England, terminated a long series of experiments by patenting an artificial stone that he described as Portland cement.

In 1872 the first plant was started in the United States but expansion was slow until the early nineties when the rotary kiln and the burning of pulverized coal as a fuel was introduced. At the present time there are some 127 operating plants in this country. Last year they consumed over 10,500,000 tons of coal and supplied more than 3 per cent of the total tonnage of the railroads in producing more Portland cement than was produced in the other countries of the world combined.

Iron and Steel Market in Belgium Is Seriously Disturbed

WASHINGTON, June 24.—The entire market for iron and steel in Belgium is deranged and immediate prospects are unpromising, according to a cablegram received by the Department of Commerce from Acting Commercial Attaché Samuel H. Gross, Brussels. American inquiries for steel strips for binding bales have been noted. The readiness of steel and wire mills to accept business for quick deliveries is indicative of instability, the report says, and considerable sheet and plate orders from Chinese and South African consumers who ordinarily buy in Belgium are reported to have gone to Germany. Irregular Belgian quotations are declared to testify to the unfavorable outlook and German quotations on heavy grades run from five to seven shillings under the Belgian quotations.

The temporary stimulation of the Belgian steel market as the result of the declining value of the franc, the acting commercial attaché says, was later handicapped by general political uncertainty surrounding the French elections. Foreign buyers held off in the expectation that a settlement of the Ruhr labor difficulties would bring more favorable German quotations. Belgian mill and forge operators are now apprehensive as to the ease with which German producers recover from adverse industrial situations and immediately gather in foreign contracts at prices making local competition difficult, if not impossible. French and Luxemburg competition is less critical than German at present. It is believed, the cable says, only a question of time when French price competition will be made to meet German rivalry.

Slight improvement is noted in the Belgian pig iron market, but prices still are regarded as too high to attract large contracts. Nominal quotations on semi-finished steel remain stationary and the tonnage available in the open market is still limited by local consumption. British buyers generally offer under Belgian figures. Export operations in finished steel are comparatively rare, but domestic buying is more active due to the expectation of a further decline in the franc. Owing to the exhaustion of forward orders, mills frequently are making concessions for firm contracts. It is reported that German producers are quoting bars two to three shillings under the prices of Belgian plants.

Film of Wire Rope Manufacture

Under the title "Heat-X, the Story of Wire Rope," the John A. Roebling Sons Co., Trenton, N. J., has had made by the Pathéscope Co., 35 West Forty-second Street, New York, a five-reel film showing the making of wire rope from the loading of pig iron and scrap on the open-hearth charging cars to the testing of the completed rope. The pictures were taken both in the plant at Roebling, N. J., and in the main plant at Trenton. The story is carried through the open-hearth, blooming mill, billet, shear, rod mill and wire drawing stages at Roebling and then transferred to the big rope machines at Trenton. The film shows particularly how the process is watched at every stage of manufacture, with all the checks of inspection and the occasional rejection of material which does not come up to exacting specifications.

Closing this film, which was shown in New York June 20, was a view of a train, including four cars carrying 160,000 lb. of wire rope to the new Bear Mountain bridge over the Hudson, this shipment being the preliminary rope swung across the river and from which the main suspension cables will be laid up. The final cables will be made of wire 0.192 in. in diameter, this wire being drawn from rod of ½ to 9/16 in.

Norwalk Iron Works Co. Sold

Plant, equipment and good will of the Norwalk Iron Works Co., Norwalk, Conn., have been sold to Charles B. Stanley, a Cleveland banker, and the sale has been confirmed by Judge Edwin S. Thomas of the United States District Court in Norwalk. The purchaser is a member of the Cleveland banking firm of Stanley & Bissell and represented bondholders, whose petition to foreclose a mortgage on the Norwalk property forced the company into bankruptcy last December.

The Norwalk company, a new corporation, has been formed and will operate the plant, making compression machinery as heretofore, and extending its line to include a complete range of air and gas compressors.

Directors of the new company are Charles B. Stanley, Howard N. Bissell and George F. Griffith, Cleveland; F. R. Hickman and E. H. Havens, Bridgeport, Conn., and R. C. Witmer and T. H. Hermanson of Norwalk. The directors elected Mr. Havens president, Mr. Hickman vice-president and treasurer, R. C. Witmer, secretary, and T. H. Hermanson works manager. Mr. Havens was appointed receiver of the company when it was forced into bankruptcy. Mr. Hickman has been serving as general manager under the receivership.

Iron League Asks Injunction Against Union

A petition has been filed in the Supreme Court of New York by the New York Iron League asking a temporary injunction to restrain the iron workers' union from continuing the strike which has been in force since May 1. It was asserted in the petition that members of the Iron League had incurred damages amounting to $5,000,000 through picketing tactics, in which, it is alleged, strikers resorted to bribery, violence and intimidation, and employed illegal methods to prevent strikebreakers from working for members of the league. In the complaint it is stated that the origin of the dispute dates back to 1905, when the workers went out in defiance of an arbitration plan, and an agreement for a closed shop is described as between the Building Trades Employers' Association and the Building Trades Council, effective Jan. 1, 1920. The Iron League has declined flatly any terms for a closed shop.

The By-Products Coke Corporation, 332 South Michigan Avenue, Chicago, has awarded a contract to the Koppers Co., Pittsburgh, for the construction of by-products coke ovens, 45 x 200 ft., and a bin, 44 x 90 ft., at its plant near Torrence Avenue and 114th Street, South Chicago. The improvements will cost $525,000. The By-Products Coke Corporation is a leading producer of foundry and furnace coke, as well as coke for the domestic trade.

Members of the National Association of Purchasing Agents in southwestern Ohio held a meeting at Dayton, Ohio, June 19, at which the subject of governmental purchasing was the principal topic discussed. The members were the guests of the Cincinnati association at dinner.

Safety Contest Results in a Tie

Kentucky and Ohio Steel Makers Engage in Unique Rivalry—How the Campaign Was Organized and Carried On

THERE are three outstanding features of the safety contest, now going on between the American Rolling Mill Co., Middletown, Ohio, and the Newport Rolling Mill Co., Andrews Steel Co., Globe Iron Roofing & Corrugating Co., and Newport Culvert Co., all at Newport, Ky.

That two great competitive corporations operating the same kind of plants and having the same departments could get together and stage a contest in the great work of accident prevention shows to what an extent the work for safety has a grip on the modern business executive. The second great feature at the Newport rolling mill is the nearing of the goal in an accident prevention campaign, which has been carried on for the last year and more especially the last five months. This is more readily understood when we state that the 1800 to 2500 employees are almost all new men, a large number of whom came direct from the farm and hillside, with little conception of what mill work is and practically no idea of self-protection against accident in new and unusual surroundings. The third great outstanding feature, and perhaps the greatest, is the avidity and zeal with which these men have seized the opportunity of making "safety first" a real live and existing part of their lives and work.

Taking these things up in order, the first two can be explained together. The plant had started, on the first of this year, a vigorous effort to cut down an appalling list of accidents which were coexistent with and largely the result of breaking in an entirely new organization, even to the extent of over half the force of foremen. Lost time accidents for 1923 had averaged a little over 25 per month. To start the campaign, a monthly safety dinner was added to the regular weekly foremen's meeting. At these dinners were all superintendents, foremen and keymen of the plant. Safe practices and accident prevention were the only subjects discussed, and by these efforts, through the foremen, accidents were cut down successively from 21 in January to 8 in April.

However, the ultimate goal was a long way off, unless the idea of safety was got to the individual workman, for, after all is said about "safety first," it can be all summed up in the statement that accidents are prevented only by personal caution.

How the Contest Came About

About this time the American Rolling Mill Co. was staging a campaign in Middletown and a direct challenge resulted for a contest in accident prevention. To make the contest fairer, the three other companies mentioned combined their efforts on one side and the Middletown plant on the other. This brought plants having steel works, blooming and bar mills, sheet and jobbing mills, galvanizing and roofing departments on each side.

One strict condition laid down was that the definition of a lost time accident should be the same for all. Thus, a lost time accident was defined as one in which the injured man was unable to assume his regular duties without help on the day following that on which the accident occurred, or one in which compensation was paid to the employee, regardless of whether he lost any time or not.

Organizing for Safety

Dividing the mills at Newport into groups, according to the class of work performed, chairmen were selected for each group from among the workmen, who in turn selected their committeemen. These committees were given the power to stop any unsafe practices seen by them, and were the leaders of their groups through the campaign. The groups were pitted against each other to make a record for May. In spite of rain, May 1 blossomed out with the plants decorated and plastered with safety signs, slogans, descriptive sets, that gave them the appearance of a county fair, all made by the workmen of the various groups.

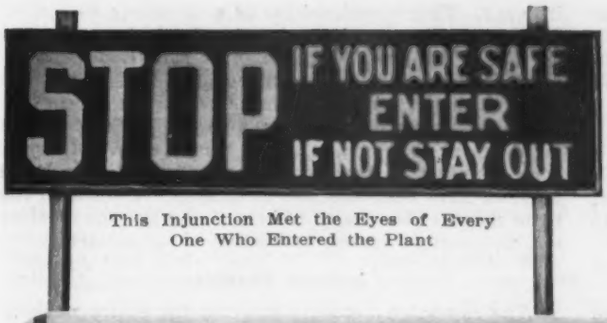
Every one who entered the plant, visitor or workman, was compelled to wear a badge, cap or other insignium, with a group number, showing he was safe and able to take care of himself. It was impossible for anyone to get by the gate or enter any department not wearing such identification, without being accosted and even put out until someone known to the committeemen would vouch for him and provide him with a badge of safety. This was probably the most effective weapon employed against accident, as it continually impressed every workman with the importance of being safe himself, and in so doing upholding the honor of the group to which he belonged. The group spirit grew keener and brought out so many unknown artists and slogan makers that our officials now believe they know where the scenario writers of the movies came from.

Visualizing Results

A large electric sign proclaiming "safety first" was installed conspicuously, while directly over the gate was a sign demanding that anyone not safe stay out. An electric sign with 31 lights, outlining the word "May," was started with white lights on the first of the month, and every day on which no accident occurred a green light was substituted, and a red one for a day on which an accident occurred. "Old Man Carelessness," much bandaged, spotted with red paint, limped through the plant on crutches, followed up and chased by a neat and natty workman representing Safety First on the last day of April, and on May 1 an imitation grave appeared with a tombstone declaring that Old Man Carelessness was there buried forever. Another group hung the same offensive Old Man Carelessness from a pole on a boat in the reservoir, and drowned him inch by inch as the month went on without accident to one of their group. Still another group took a dummy labeled Old Man Carelessness and, putting it under the skull cracker, crushed it to bits. This group has not had an accident since.

A large black cat with electric eyes was placed in front of the main entrance and a strip of the black was painted white each day there was no accident; on the two days in which accidents did occur the color of the group having the accident was painted on instead. The proverbial donkey, proclaiming he was a jackass and did not believe in safety, was cut out of wood and stood up in contradistinction to the steady draft horse labeled that he was no jackass and did believe in safety. The electricians built up an imitation electric chair to electrocute any careless workman.

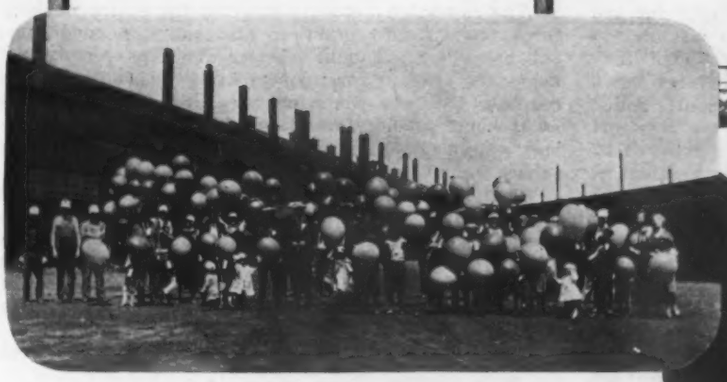
Another group started a dummy up a ladder of 31 steps, representing each day of the month, and advancing him a step for every day no accident occurred and proudly sat him on the top at the end of the month, waving a flag and proclaiming the fact in a big sign that they had gone "over the top." This same group sent up balloons with safety slogans attached and stamped return cards, one for each man in the department. Many of the 150 cards were returned from points more than 40 miles away. Another group had Old Man Carelessness caged and locked up in a cell with signs proclaiming the uselessness of any attempt to get bail. Another group "rooted for safety," with



This Injunction Met the Eyes of Every One Who Entered the Plant

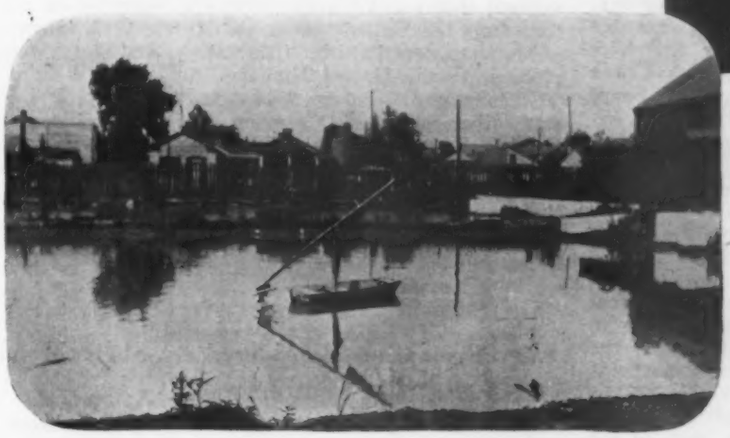
Visualizing Safety

Some of the Means of Bringing Home to the Worker What Carelessness Costs



Sending Up a Battery of Balloons Carrying Safety Slogans. Some of the cards were returned from over 40 miles away

As Each Day Passed Without Accident, a White Stripe Was Painted Across the Black Cat



"Old Man Carelessness" Nearly Drowned on May 30

Dummy Sitting on Top of the Ladder of Success After 31 Days Without Accident in this Department

Impromptu Band That Led the Opening Day Parade, With "Old Man Carelessness" and "Safety First" Personified

pictures of the farm yard hog, visualizing the motto. Among the best things were the tableaux of little children, represented by dolls, at various sorts of play, but always overtopped with a sign reminding "daddy" that he must come home unhurt to his family.

Careful Control and Its Results

The workmen's committees investigated all cases of carelessness, and tried the offenders in regular court procedure. In some cases men were recommended to be laid off for a period and in others discharge was recommended. The management in all cases adopted these recommendations.

These and many more stunts were thought out and executed by the workmen's committees to visualize to their fellow workmen the idea of safety. That they succeeded is shown by the figures on the large score board at the main gate at the end of the month, which showed two slight lost time accidents at the Newport Rolling Mill for May, as compared with a total of 53 for the four months previous, and one such accident at Andrews Steel Co., compared with 17 in the four months preceding. The American Rolling Mill at Middletown had two slight lost time accidents and unfortunately one fatality, thus making the contest a tie with a score of 3 to 3. So the contest goes on for the month of June, and to date with the month one-third gone the score stands no accidents for all.

As was said in the beginning, the greatest feature of this campaign was the fact that the workmen "put it over." They visualized the idea of safety so plainly in their tableaux, signs (some of which were even threats of discipline) and continued talk, that the least intelligent man among them could not fail to grasp the idea that it was up to him personally to be careful. The most important part of the anatomy that prevents accidents is that part above a man's ears and, while some stunts that were carried out bordered on horse play, all have been effective in making every one in the plant use his own brains to help stamp out the careless and thoughtless actions that bring about accidents.

Indirect Benefits

The campaign not only directed the entire working force toward safe practices and sanitary conditions, but brought about much better relations among the men themselves, thereby cementing the organization together both for work and pleasure. This is shown by the spontaneous formation of an orchestra, a baseball league and such organizations by the men themselves.

That such a campaign is soundly economic and good business policy is shown by the marked improvement in the quality of work put out by the men, as well as the maintaining of production in all departments. An added zest was put into the work and the feeling of satisfaction of a job well done was engendered all over the plants. The only department that suffered in reduced output was the hospital, where treatments were cut down at least 60 per cent.

Screw Threads for Hose Couplings

An important step has been taken in the approval by the American Engineering Standards Committee of American national screw threads for fire hose couplings. Approval of this standard, which had been submitted under the leadership of the National Board of Fire Underwriters, the National Fire Protection Association, the American Society of Mechanical Engineers and the American Water Works Association, marks for the first time a national agreement on tolerances or limits of accuracy necessary to secure interchangeability in manufacture. Lack of uniformity has been shown in a startling way by the exhibition in a single collection of 600 sizes and variations of fire hose couplings. That this condition constitutes a real menace has been shown in numerous conflagrations in which outside assistance was of no avail because the hose of neighboring fire departments would not connect to local hydrants.

Tools have been developed since by which the threads on fire plugs and hose couplings, that do not differ too greatly from the standard, can be changed over to the standard form by a simple operation. More than 700 cities and towns have not only decided to adopt the standard, but have carried out the practical steps necessary to put it into working order, while numerous other cities, towns and counties have officially decided upon its adoption. About three-fourths of the 8000 cities and towns in this country having fire protection still have non-standard threads.

Iron and Steel Imports into British India Decline

WASHINGTON, June 24.—Showing a decline of 3.5 per cent from the preceding fiscal year, imports of iron and steel products into British India during the fiscal year ended March 31, 1924, amounted to 865,640 gross tons, according to the Iron and Steel Division, Department of Commerce. The bulk of the imports consisted of steel bars, rails, fish plates, structural material and hoops and strips.

Belgium furnished over half of the imports of beams, pillars, girders, bridgework, and iron bars and channels for March, 1924. About half of the hoops and strips were from the United Kingdom, while the United States held second place with one-fifth of the shipments. The United Kingdom furnished all but 40 tons of the cast pipe and fittings, and all but 161 tons of the galvanized sheets and plates. With the exception of 355 tons from the United States, the March, 1924, imports of tin plate were British. Other sheets and plates were credited to the United Kingdom, 6071 tons, Belgium 2773 tons, and Germany 2514 tons, with only 72 tons from other countries. Germany led in wire nails with Belgium in second place. The wire rope was all from the United Kingdom. Steel bars and channels were largely from Belgium, 12,646 tons, Germany 4480 tons, the United Kingdom 1965 tons, Luxemburg 725 tons, and France 308 tons. The majority of the wrought tubes, pipes and fittings were of British origin.

Sales Promotion Considered by Sheet Metal Contractors

WASHINGTON, June 24.—Promotion of sales of sheet metal and its products constituted one of the principal topics discussed at the twentieth annual convention of the National Association of Sheet Metal Contractors which was held here on June 17-20, inclusive. Consistent with this policy the convention selected a representative to take charge of the preparation of a book on standard practice in sheet metal work who will do the work as a member of the trade development committee. The convention also gave considerable attention to the question of vocational training and adopted a resolution to promote the engaging of apprentices in sheet metal work and to outline a course of instruction. D. M. Strickland of the American Rolling Mill Co., Middletown, Ohio, made an address on the question of metal rust. He dealt with the question of coating and explained the different kinds and their importance as a protection to metal.

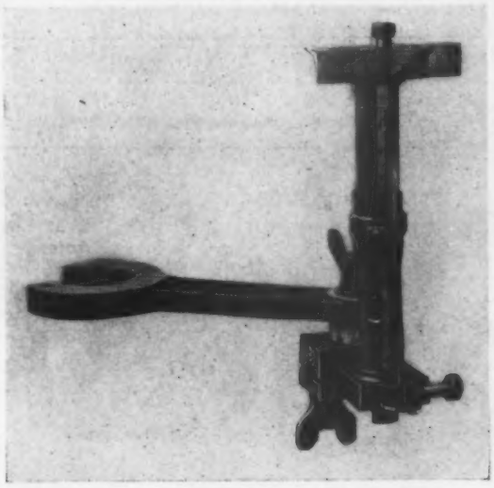
The convention, which was attended by 115 delegates, elected the following officers: President, W. C. Markle, Pittsburgh; first vice-president, Paul L. Biersach, Milwaukee; second vice-president, Walter Budd, Durham, N. C.; third vice-president, A. N. Lichty, Waterloo, Iowa; fourth vice-president, Joseph P. Gardner, Indianapolis, (reelected); secretary, E. L. Seabrook, Philadelphia, (reelected); treasurer, Julius Gerock, St. Louis, (reelected).

Atlanta, Ga., was selected as the place of the 1925 convention.

For Locating and Measuring Vibration

A compact instrument intended for detecting, locating and measuring the amount of vibration, and employed in connection with steam turbines and other rotating machinery is shown in the accompanying illustration. The device permits of locating in its early stages abnormal vibration in a machine and remedying the condition before it reaches dangerous proportions.

The instrument, called the vibrometer, is manufactured by Kelvin, Bottomley & Baird, Ltd., Glasgow, Scotland, and is designed on the vibrating-reed principle. A number of vibrating reeds suitably loaded are



Instrument for Locating and Measuring Vibration. The device may be clamped under one of the nuts of the bearings of the machine being tested

provided, and also calibration curves connecting the free length of each reed and its natural frequency of vibration. The device may be clamped under a nut of one of the bearings of the machine being tested. A suitable reed is then set in the instrument and the free length of the reed adjusted by means of the sliding clamp until the amplitude of the reed is a maximum. When so adjusted the free length of the reed responds to the vibration of the machine, and frequency of the vibration is read from the calibrated curve of the reed. Knowing the frequency it may be determined whether it is caused by something vibrating at the mainshaft speed of the machine, or by some secondary effect.

In addition to the length-of-reed scale, the instrument is provided with an amplitude of vibration scale, so that when the reed has been tuned to the vibration, variations in the strength of the vibration are indicated by the amplitude of the movement of the end of the reed. The vibrometer is arranged so that the reed may be set in any plane and the plane in which the vibration is greatest may be found.

The sale of the Norwalk Iron Works Co., Norwalk, Conn., to Charles B. Stanley, Cleveland, banker, is confirmed by the court. The purchase was made in the interest of the bondholders, whose petition to foreclose a mortgage on the properties forced the company into bankruptcy last December. Immediately following the court's confirmation, the property was transferred to the Norwalk company, a new corporation, which will operate the plant. The company builds air compressors and has a contract for Government work. Directors are: Charles B. Stanley, Howard N. Bissell and George F. Griffith, Cleveland; F. R. Hickman and E. H. Havens, Bridgeport, Conn.; and R. C. Witmer and T. H. Hermanson, Norwalk. Mr. Havens is president and Mr. Hickman vice-president and treasurer.

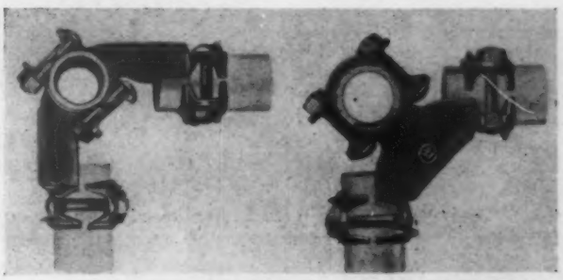
The Engineers' Club of Cincinnati held its annual outing at the Laughery Club June 19. A trip to the dam being built on the Ohio River near the club grounds was made under supervision of Government engineers.

Structural Pipe Fittings for Variety of Uses

A line of structural pipe fittings, designed for use with common wrought-iron or steel pipe in the erection of outdoor or indoor electrical switching equipment, has been placed on the market by the Westinghouse Electric & Mfg. Co., East Pittsburgh.

Although designed primarily for electrical installations, the fittings may be used also in the construction of racks, railings, bench or table frames, and similar structures. They are made up of relatively few unit castings which provide a wide variety of combinations, and are of high grade malleable iron with a minimum tensile strength of 50,000 lb. per sq. in. They are light in weight and compact. In addition to unusual strength, interchangeability and adaptability are features emphasized. In erecting a structure with the new fittings, a pipe vise and cutter and an open end or socket wrench for each of the two sizes of bolts used are the only tools necessary. Changes in and additions to such a structure may be made conveniently.

The principal feature of design is a ribbed yoke which clamps over the pipe with heavy carriage bolts to the other unit part. Various other unit parts consist of two or more yokes cast in a single piece through suitably formed connecting webs. The bolt spacings being uniform, parts designed for a certain size pipe are interchangeable with all others for that size. The form of the yoke and other unit parts provides considerable area of contact with the pipe. As the fittings are bolted up they yield slightly, due to the malleable characteristics of the iron, until they fit the pipe closely. The load necessary to slip a single fitting on a pipe is claimed to be in excess of 3000 lb. for a 1¼-in. pipe and 4500 lb. for a 2-in. pipe and the strength in tension and shear said to be considerably greater. The bolts employed in the fittings are ordinary carriage bolts, using the square shank under



A Four-Way or Side Outlet Tee Is at the Left, and Another Form of Side Outlet Tee at Right

the head to fit into the square hole in the fitting. The nuts are of hexagonal form. All bolts are galvanized by the hot dip process.

The fittings are designed for two standard pipe sizes, 1¼ in. and 2 in., and for a combination of these sizes, with a few fittings of ¾, 1 and 1½-in. size for light switchboard frames and for clamping insulators to pipe frames. They are furnished in either a black gloss baked finish for indoor use or are galvanized for outdoor installations.

St. Louis Foundrymen to Be Guests

ST. LOUIS, June 24.—The foundrymen in the St. Louis industrial district and nearby towns will be the guests of the St. Louis Coke & Iron Co. next Saturday. The program includes an inspection of the properties of the company at Granite City, Ill., and a luncheon at the plant. The party will meet at the west end of the McKinley bridge at 10 a. m. Automobile transportation will be provided for all.

The fifth Norwegian Industries Fair, to be held in Christiania Aug. 31 to Sept. 7, promises this year to afford a good idea of the industrial development of Norway since the war. The exhibitions are limited to Norwegian products.

Three New Portable Air Compressors

Three new portable air compressors which have been placed on the market recently by as many companies are shown in the accompanying illustrations. Included in the uses of equipment of this type may be mentioned erection and repair work in industrial plants, supplying air for painting, cleaning and other work. It may be employed to advantage where air lines are not installed and would be too expensive to put in for temporary work.

The machine shown in the left-hand illustration, offered by the Ingersoll-Rand Co., 11 Broadway, New York, and designated as the 4¼ x 4 in. type 20 portable compressor, has a piston displacement of 60 cu. ft. per min. As in the larger type 20 machines previously offered the duplex, vertical compressor, direct-connected to a tractor type gasoline engine; inclosed construction; circulating water cooling system for the engine and compressor; compressor regulator and engine control for reducing speed during unloaded periods; and one-piece cast-steel frame are among the features. Compactness and accessibility are also features.

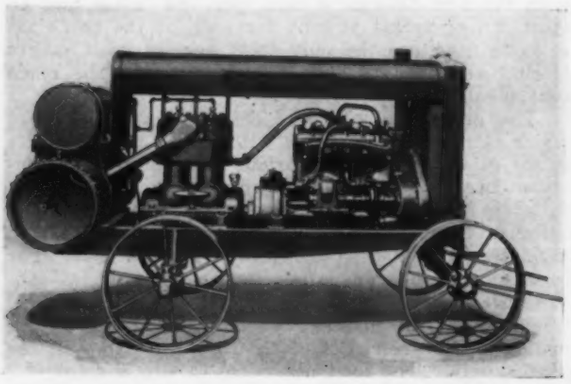
A variety of mountings including wooden artillery wheels with solid rubber tires and steel axles, Ford truck, and on skids are available. Electric motor drive may be provided. The compressor will operate one of the company's No. 90 riveting hammers, two 2-S calking or chipping hammers, one 56 H clay or trench digger, and other tools.

The gasoline engine driven portable compressor shown in the right-hand illustration is a recent addition to the line of the Chicago Pneumatic Tool Co., 6 East Forty-fourth Street, New York. It is of 100 cu. ft. capacity and will operate one rock drill, or two concrete busters or two clay diggers; two riveting or calking hammers or four backfill tampers.

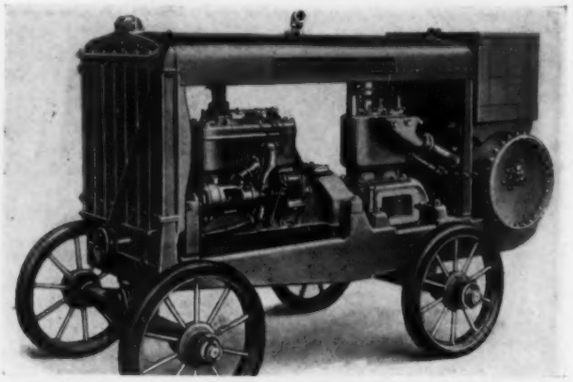
The machine is of the vertical, single-acting duplex type equipped with Simplate inlet and discharge valves. The company's differential unloader regulates the air supply and the "auto-pneumatic" throttle employed is said to economize fuel by slowing the engine to idling speed during the unloaded periods and speeding it up again just before the load is resumed. Splash lubrication is employed and glass inserts are provided in the removable doors of the crank-case for the convenient inspection of the lubrication system. The flexible coupling, which connects the compressor directly to the engine may be disconnected for starting when desired. Both the engine and compressor are cooled by a large radiator, having built-in sections. A cast-steel deck provides the base for the engine, compressor and air receiver, the gasoline tank being carried in a separate section of the tool box. The unit is available in the regular steel-wheel or rubber-tired portable model, the rubber-tired trailer type or mounted on a 1-ton Ford truck chassis.

A portable unit of 103 cu. ft. capacity recently brought out by the Sullivan Machinery Co., 122 South Michigan Avenue, Chicago, is shown in the lower illustration. This machine, which is designated as the type WK-311, may be employed to operate a Rotator hammer drill, one or more concrete breakers, clay spaders, or pneumatic riveters. It may be conveniently used in sand blasting, operating paint sprays, calking pipe line and in other work.

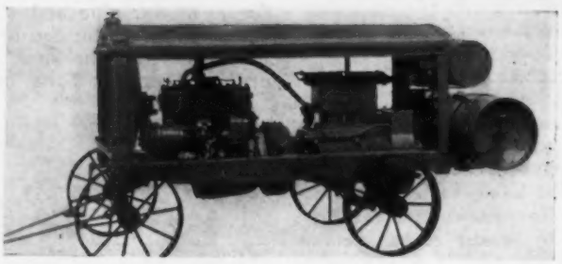
The compressor is direct connected to a Buda gasoline engine, and has a rating of 17 hp. for this duty. The compressor is a vertical two-cylinder, single-acting, single-stage unit, said to be designed especially for this service. Lubrication is automatic and cooling water for the engine and compressor are supplied by a circulating pump in the same system. The air valves are of the company's "wafer" type. The compressor, engine and equipment are mounted on a one-piece steel casting, and a 12 gal. gasoline tank and 12 x 48 in. air receiver are carried horizontally in cradles at the rear of the truck body. The machine is ordinarily mounted on a steel wheel truck for highway use, the complete unit weighing 3235 lb., or it may be mounted on a trailer truck with rubber tires or on a wooden skid. The machine may also be set on a Ford truck, using the No. 9 Olson extension with longitudinal spring supports.



The Small Portable Air Compressor of the Ingersoll-Rand Co. Is Shown Above. It has a piston displacement of 60 cu. ft. per min. and incorporates the features of the company's larger type 20 portables. Either gasoline engine or electric motor drive may be provided



The Compressor of the Chicago Pneumatic Tool Co., Shown Above, Is of 100 Cu. Ft. Capacity. It will operate two riveting and calking hammers, one rock drill and other tools



The Machine of the Sullivan Machinery Co. Is at the Left. When not in use, working parts are protected by sheet steel sides. A variety of mountings is available

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Production of bituminous coal, which reached a low point in the week ended April 12 and had been gradually ascending, fell off in the last two weeks, with the result that the daily average output in the past 11 weeks is less than 1,200,000 tons and nearly one-third less than the daily average for the first five months of 1923. The reduced production has brought the daily average so far this year down to 1,500,000 tons, or 15 per cent below last year's rate for the same period.

CONDUIT THREADING MACHINES

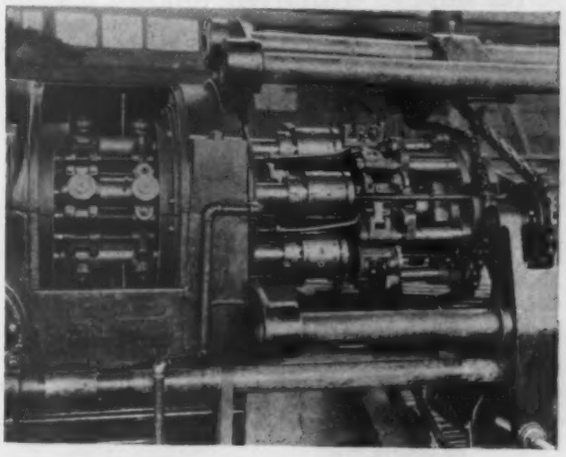
Both Ends of 2400 Ten-Foot Lengths or 4800 Ends of ½-In. Material Threaded Per Hour

The threading of both ends of 2400 10-ft. lengths of ½-in. electric conduit, or 4800 ends per hour, is the production claimed for the pipe threading machine illustrated, which is being marketed by William K. Stamets, Pittsburgh. Two sizes are available, one of which, the No. 2, is for pipe from ½ to 2 in. nominal diameter, a No. 3 machine being for 1½ to 4 in. pipe. The double-end machine is adapted to standard conduit which is made in 10-ft. lengths; for random lengths a battery of two single-end machines would be employed.

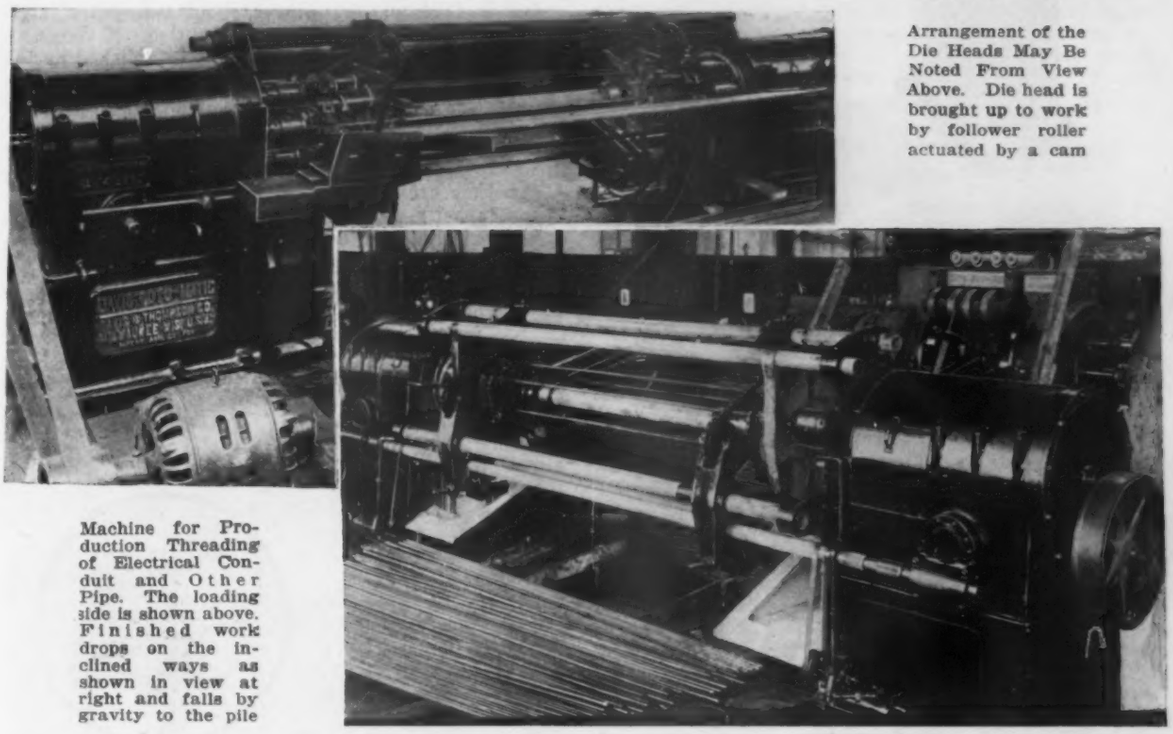
The machine, called the Roto-Matic, is manufactured by the Davis & Thompson Co., Milwaukee, and in general principles is similar to other Davis machines of the rotating type. The six-station work spindle rotates in synchronism with two six-spindle tool drums, one at each end of the machine. One of the accompanying illustrations shows the loading side of the machine. In view of the production noted above, it is apparent that to realize the full productive possibilities of the machine a hopper or feeding chute should be provided, hand loading at this rate for any length of time being impossible. The finished work drops to the inclined ways, as shown in the second illustration, and rolls out on the finished pile of work. Coolant dripping from the ends of the conduits and from the die heads is carried back to the pumps over a series of screens and baffles and is recirculated.

A pulley at each end of the machine is driven by belt from an electric motor. The pulley at the right, shown in the second illustration, drives the cutter spindles on that end and also both spindle drums and the work spindle, by means of worm gearing on the shaft shown at the back of the machine. A clutch is employed between shaft and pulley.

Six special self-opening die heads are mounted on the cutter spindles of each of the two drums. Each die head slides with its spindle and is backed by coil springs so that inequalities in length of the work up to 1 in. may be taken care of. As shown in the close-up illustration the die head is brought up to the work by a large follower roller actuated by a stationary cam. The die head is bell mouthed so that slightly bent conduit can be drawn into it and centered, the work-holding chuck being arranged to float sufficiently to permit alinement. No positive feed is provided for the die heads, each one pulling itself on the work, cutting a predetermined length of thread and then being tripped and returned to position. A tool inside the die head serves to chamfer the inside of the work.



Arrangement of the Die Heads May Be Noted From View Above. Die head is brought up to work by follower roller actuated by a cam



Machine for Production Threading of Electrical Conduit and Other Pipe. The loading side is shown above. Finished work drops on the inclined ways as shown in view at right and falls by gravity to the pile

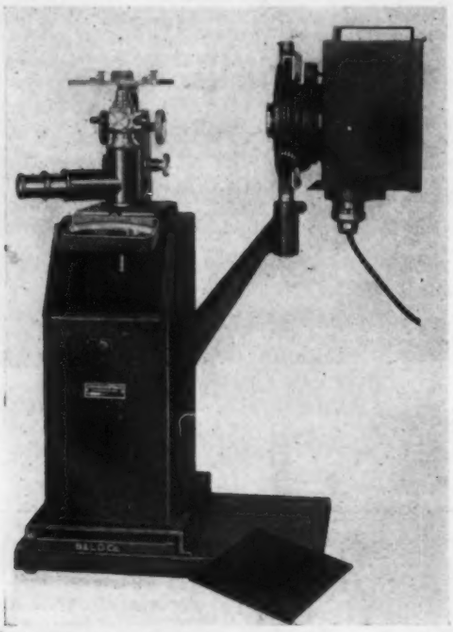
The device for bringing coolant to the cutting elements is a feature. Surrounding the face of the spindle drum adjacent to the work is an annular casting, U-shaped in cross-section. The legs of the U are packed where they join the drum, a water-tight chamber for the coolant being thus formed around the drum. The main feed pipe is tapped into the chamber as shown in close-up view and a coolant pipe is placed alongside of each spindle as shown. The pipe is tapped into the face of the drum and connected to the coolant chamber by a passage.

The two-jaw work-holding chucks are arranged to float slightly to permit bent work to be alined. They are closed by toggles operated from a short shaft which is given the necessary motion from a clamping arm located beneath the clamping chain shown in the illustrations. The chain travels with the work spindle, there being no relative motion between chain and clamp.

Simple Metallographic Apparatus for Low Power Work

A simplified metallographic equipment for general routine inspections has been introduced by the Bausch & Lomb Optical Co., Rochester, N. Y. Such inspections seldom if ever require magnifications above 200 diameters and hence do not require the expensive parts which are so necessary in research outfits.

This simplified metallographic equipment is a compact unit, with all of the parts mounted on one base, and with the light source in fixed position. The equipment includes an inverted microscope, camera and special ribbon filament illuminant. It is easy to operate, readily portable and especially suited for low power work. It gives magnifications varying from 64X to 210X.



Rapid Relining of a Blast Furnace

The blast furnace of the St. Louis Coke & Iron Co., Granite City, Ill., was blown in after relining on June 5, or just 53 days from the time when it was blown out on April 14. The salamander was removed while in the molten condition by means of an open trench which tapped the furnace 6½ ft. below the iron notch. This method made it possible to drain the hearth within 21 hr. from the last cast and at an almost negligible cost. The brick work on the relining was started on April 27 and the masons reached the mantle on May 17. On May 26, or 30 days from the time the brick work was started, the masons had finished.

Electric Welding of Gasoline Tanks

Automatic arc welding has been used by the Wayne Tank & Pump Co., Fort Wayne, Ind., in assembling underground gasoline tanks. The tanks are made from ⅛-in. galvanized sheets cut in three sections, the assembled tank having three seams 120 deg. apart and 116 in. long. The circumference of each tank is 118 in.

Welding apparatus built by the General Electric Co. was installed. The welding machine consists of a framework for holding the tank in position and for carrying the automatic welding head and electrode supply. The joint to be welded is placed between two clamping bars and a backing-up bar. Along this seam travels the automatic welding head which feeds the electrode wire to the arc.

The procedure of welding is to tack each of the longitudinal seams at each end by acetylene, each of these two tack welds being approximately 3 in. long. The plates are placed about ⅛ in. apart before tacking, but are drawn up tightly when the gas tack is completed. Then they are placed on the automatic forms and the arc struck at one end and allowed to continue without breaking to the opposite end. The clamps are released and the tank is rotated one-third of its circumference to the next seam and the automatic head welds the next seam on its return. The clamps are again released and the tank rotated to the third or last seam, which is welded in the same manner as were the two previous seams.

With the automatic installation production has jumped to 75 ft. per hour. The three longitudinal seams are completed in a total time of 35 min. Besides the time saving, another favorable factor is that the galvanizing on the inside of the tank adjacent to the weld is in good condition. The entire cost of installation, it is stated, was paid for in two months of operation.

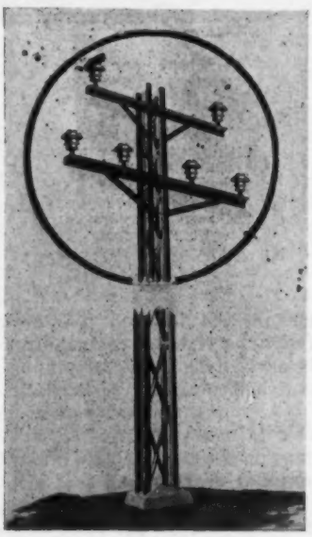
Ore Unloaders Installed

The Pittsburgh & Conneaut Dock Co., Conneaut, Ohio, subsidiary of the United States Steel Corporation, has completed two 17-ton ore unloaders which are scheduled to be placed in operation June 27. These ore unloaders, which are of the W. S. M. type, are electrically operated and with their erection the Conneaut dock now has five unloading machines of the same capacity and practically alike. The two built this year replace four 10-ton steam hydraulic Hulett unloaders built by the same company, the first of which was completed in 1898 and the others about two years later. The four old machines will be dismantled. A record in building ore-handling equipment was established by the Wellman-Seaver-Morgan Co., which erected the unloaders. The order for these was placed Dec. 26 last and their fabrication and erection were rushed in order to have them ready for use as early as possible during this year's season of navigation.

Another ore unloader of the same make and also 17-ton capacity was placed in operation a few days ago on the Erie Railroad dock. This dock now has two unloaders of the same capacity.

New Steel Pole in Quantity Production

Announcement is made by the Truscon Steel Co., Youngstown, Ohio, that the new steel pole department of that company is now ready for a quantity production schedule and is prepared to manufacture all sizes of steel poles up to 50 ft. in length. The Truscon pole is pressed from 5-in. to 12-in. steel channels or I-beams. It is designed so that no special equipment is needed by the lineman in ascending or descending, thus eliminating pole steps and the necessity for use of spurred climbers. The pole is adaptable for use on transmission and distribution lines, telephone, trolley and street lighting systems.



A portion of the web of the channel or I-beam is pressed out to a predetermined angle and then riveted to a like section of another channel or I-beam.

Where more than ordinary strength of pole and extra length is required, the pole can be made in combinations of two or more. A line of fittings has been designed for the steel pole to fit any size standard cross-arm, either wood or steel.

Sheet Bars Cast Centrifugally

Structure of the Bars and Steel Rolled from Them—Physical Properties of Steel Strip Made from Such Bars—Economic Features

BY LEON CAMMEN

THE idea of making sheet and plate bars without ingot casting, or soaking and blooming, but instead to cast directly long slender bars and submit them to the simplest and cheapest kind of rolling, is sufficiently revolutionary to justify a reasonable amount of caution on the part of steel men—at least until it has been shown by facts that it can be actually done. It also involves too many disturbing economic possibilities to be neglected by steel men—if they are wise.

The basic idea of the new process is that, by the use of the so-called bottle-neck mold (THE IRON AGE, Dec. 7, 1922), bars or ingots may be cast centrifugally without the formation of cold shots which usually accompanies all attempts to cast centrifugally in divided molds. In the bottle-neck mold, Fig. 1, the metal is fed against the smooth part of the mold. It is then propelled by centrifugal force, or rather by the pressure produced by it, along the axis of the mold so that by the time it reaches the partitions, the metal is already whirling at the same speed as the mold. There is therefore no blow, and the metal flows gently past the partitions, filling the intervening spaces.

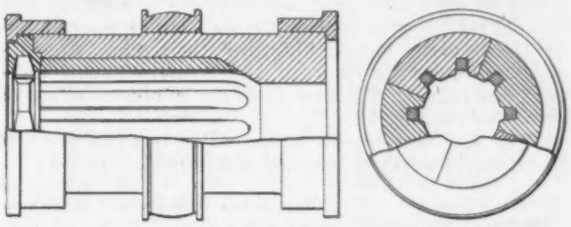


Fig. 1—Cammen Bottle-neck Mold for Casting Plate and Steel Bars

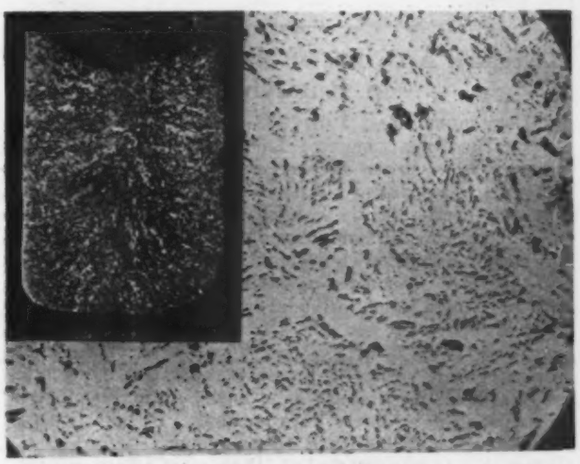


Fig. 2—Macro-photograph of a Good Casting of a Small Bar

Thus far, two machines, both operating successfully, have been constructed. One, making four bars, 4 in. by 4 in. by 8 ft. 9 in., is in a plant as to which, for legal reasons, no information can be published at this time. The other machine, making small bars, ¾ in. by ¾ in. by 12 in., is at present at the plant of the Electro Metallurgical Co., Niagara Falls, N. Y., making a series of experimental runs on various alloys. In this article we shall refer exclusively to casting plain steel by this method.

The structure of bars, cast by this method, is shown by photomicrographs Figs. 2 and 3. Fig. 2 shows a sample of good casting practice, with the metal solid and flawless; its structure is also distinctive. Fig. 3 shows a form of trouble that would have been serious if it were not for the ease with which it can be guarded against. In this case there is a hole, really a pipe, though located not vertically, but horizontally, from ⅛ to ¼ in. below the surface. Reference to this factor has already been made in the writer's article in THE IRON AGE, Dec. 7, 1922, referred to above, and also in John A. Rathbone's paper on "Centrifugal Casting of Piston Rings" before the Cleveland meeting of the American Foundrymen's Association, May, 1923. All indications are to the effect that the presence of this pipe is due to improper temperature conditions in the mold.

All that is necessary to produce a casting having throughout the structure shown in Fig. 2 is to pour the metal at a proper rate, and to keep the mold above a certain temperature, depending on the size of the casting and a number of other conditions which, roughly, may be said to vary for various kinds of castings from 600 to 1000 deg. Fahr., with the greatest part of work done at the lower temperature. The mold in this case is not to be heated artificially, and the rate of casting for each machine has to be selected so as to permit the mold to maintain approximately its proper temperature.

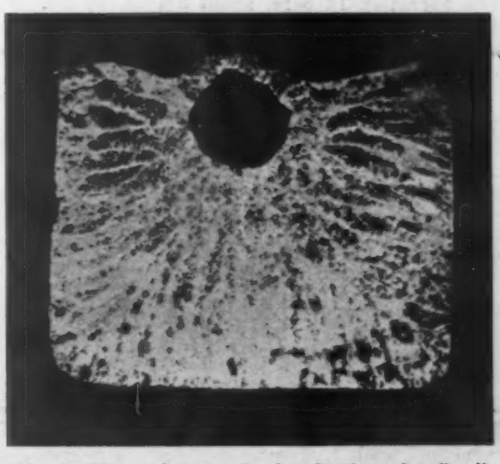


Fig. 3—Macro-photograph of a Casting of a Small Bar Showing a Pipe Due to Cold Mold

After casting, some of the bars have been rolled in a small rolling mill to a strip having a thickness 0.123 in. As the initial thickness of the casting in this case was only 0.6 in., there was very little work put into the metal to change its grain structure. All the more significant therefore is the structure of the rolled strip as shown by macrophotograph, Fig. 4, and photomicrograph, Fig. 5. In the first, attention may be called to the absence of lines due to ingotism, notwithstanding the fact that the metal has been worked only very little. Fig. 5, with its fine grained ferrite and pearlite, needs no special comment.

Physical tests of the strip from which photographs, Figs. 4 and 5, were taken, have given the following results (tests made by the New York Testing Laboratories, New York):

Yield point, lb. per sq. in.	49,100
Tensile strength, lb. per sq. in.	72,700
Elongation, per cent in 2 in.	26.5

It should be borne in mind in this connection that the above data of physical tests, as well as photographs, Figs. 4 and 5, refer to metal as rolled, without any annealing after rolling.

Economic Factors

It is not intended to discuss here exhaustively the economic significance of the new process of sheet and plate bar manufacture. It may be mentioned however that an investigation, based on an extended experience with steel tube casting, has shown that, in the present state of the art, there will be no trouble in casting

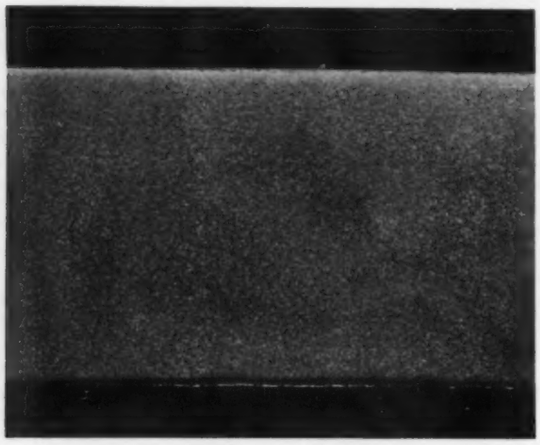


Fig. 4—Macro-photograph of Strip Rolled From Centrifugally Cast Bar

in one operation 14 bars, about 8¼ in. by 2¾ in. by 10 ft., or roughly 3 tons per machine per casting. An operation, including the pulling of the bars from the machine, need not take more than 6 min.

Such a machine, installed in lots of four, need not cost with its auxiliaries more than $40,000 to $60,000. The set is capable of operating in conjunction with the usual

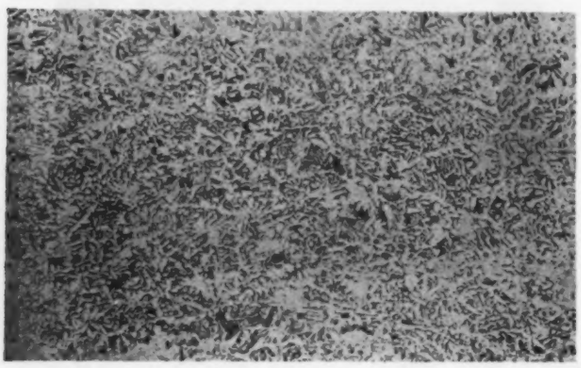


Fig. 5—Micro-photograph of the Strip Shown In Fig. 4

90-ton open-hearth furnaces, with an estimated cost of conversion of one ton of molten steel into a ton of bars at a cost of 23c. (not counting mold maintenance, royalties and overhead).

Cost of living figures of the National Industrial Conference Board, based on the budget of the wage earner, show May to have been 61.4 per cent above the figure for the summer of 1914. This is a slight reduction from the 61.8 per cent of April and is, of course, far below the 104.5 per cent peak of July, 1920. Based on this cost of living, the purchasing value of the dollar was 62c. compared with 100c. in July, 1914.

Directors of the Trumbull Steel Co., Warren, Ohio, have declared the usual quarterly dividend of 35c. per share on common stock and $1.75 on preferred, both payable July 1 to holders of record June 20.

Water Rates to Some Southern Points Are Reduced

WASHINGTON, June 24.—Iron and steel products, machinery and various other commodities were given reduced rates from New York piers of the Southern Pacific Co. Atlantic Steamship Lines by water to Galveston and New York and thence by rail to points on the lines of the Southern Pacific system in New Mexico, Arizona and California as the result of a decision announced last Friday by the Interstate Commerce Commission. The reductions come about through approval of schedules filed by the Southern Pacific. Decreases in machinery and iron and steel rates range from 40c. to 65c. per 100 lb. The effect of the report of the commission is to establish so-called Group D rates from New York piers to the destinations named. Group D includes the States of Illinois, Wisconsin and the Upper Peninsula of Michigan. This fixes New York piers rates, which come in Group A, on a parity with Group D rates from such points as Chicago. Competition among iron and steel manufacturers in the East and Middle West for trade on and near the Pacific Coast and Southern territory is expected to become sharper as the result of the decision. The new schedules were opposed by some iron and steel interests in Chicago and related territory as well as by the Chicago Association of Commerce, Chicago Shippers' Conference Association, the Santa Fe Railroad, the Western Pacific Railroad and others. The new rates are to become effective on or before July 31.

The new and present rates, stated in cents per 100 lb. on machinery and iron and steel products follow:

	New Rates	Old Rates	Amount of Reduction
Iron castings, forgings	120	165	45
Iron flooring, expanded metal	125	187.5	62.5
Wire Nails:			
50,000 lb.	130	..	..
80,000 lb.	100	165	65
Structural iron:			
40,000 lb.	125	173	48
50,000 lb.	125	165	40
80,000 lb.	100	..	..
Machinery	228	288	60
Tin plate	75	120	45
Auto pressed-steel sides:			
40,000 lb.	125	173	48
80,000 lb.	100	165	65
Wire cloth	160	225	65
Agricultural implements	193	..	..
Cast iron boilers	130	..	..
Cast iron pipe	125	..	..
Pipe fittings	100	..	..

Decreased Activities of Metal Working Plants in Pennsylvania

HARRISBURG, PA., June 23.—The semi-monthly report of the Department of Labor and Industry to the secretary, Dr. Royal Meeker, as of June 15, is somewhat more pessimistic concerning the iron and steel industry in the State than other recent reports have been. Operators in some cases are expecting increased depression before better conditions arrive. Virtually all mills are operating considerably below capacity, with most men working short hours.

Erie reports 74 per cent operation, a slight improvement over May 1, with about 50 per cent of the men on a part time basis. Harrisburg reports that its mills are operating on a short hour basis, although officials are hopeful of an early improvement. DuBois expects no relief until its railroad shops reopen.

Reading is more optimistic than most offices, reporting that most of its tube works, rolling mills and furnaces are working full time. A brass foundry, however, has been closed. Scranton feels the effect of the dullness of the coal industry, and looks for no improvement in the iron and steel trade until that industry is operating on a more satisfactory basis. Pittsburgh has a large number of high class workers without employment.

Conditions have not become worse in the Philadelphia district, according to its reports, which tell of the hiring of small numbers of machinists and other workers. Johnstown says that "wholesale reductions in forces and decreased working hours and days are very prevalent." Further curtailment is predicted. Radiator plants report decreased orders.

Heat Treatment of Cast Iron*

Effect of Low Temperatures on the Properties of the Metal for Parts of Diesel Engines—Presence of Manganese, Chromium and Nickel

BY J. W. DONALDSON

THE behavior of cast iron used in the manufacture of certain parts of the larger types of Diesel and internal-combustion engines is of extreme importance to engineers. The range of temperature to which parts such as piston-heads are subjected varies considerably, sometimes attaining 600 deg. C. The effect of low-temperature heat treatment on the properties of cast iron is, therefore, a subject well worth the attention of ironfounders, metallurgists, and others engaged in the manufacture and use of these castings.

During the last few years one or two papers have been published dealing with this subject, and valuable information has been obtained. Hurst (Engineering, 1919, Vol. 108, pages 1-3) has shown that, with commercial cast iron heated to 575 to 600 deg. C. for 48 hr. and allowed to cool slowly, a fall in tensile strength takes place accompanied by a slight increase in impact value. Decomposition of pearlitic carbon is produced, and is nearly complete in irons containing more than 2 per cent of silicon when heated in this manner.

Schuz (*Stahl und Eisen*, 1922, vol. 42, pages 1484-1488), in experiments made to determine the temperature at which pearlitic gray iron is decomposed into ferrite and temper carbon, shows that for an annealing period of 24 hr. the decomposition of the carbide commences at 500 deg. C. and is complete at 600 deg. C. For a 6-hr. annealing the action commences at 550 deg. C. and is complete at 650 deg. C., while with an annealing period of 3 hr. the decomposition begins at 575 deg. C. and is complete at 650 deg. C.

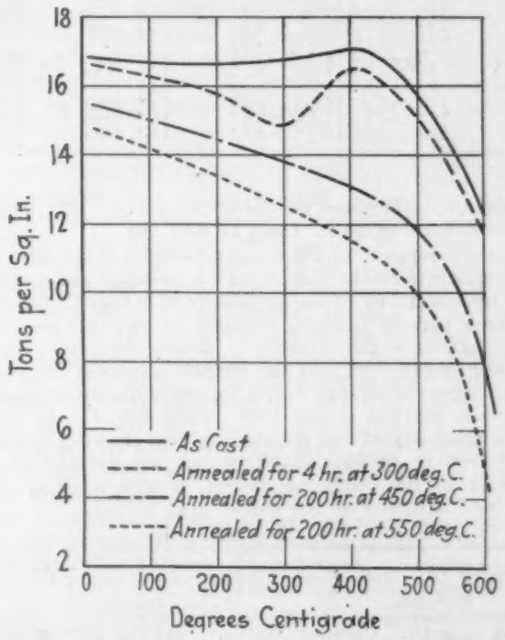
Table I.—Chemical Analysis and Tensile Strengths

Mark	P	M	C	N
Graphitic carbon	2.48	2.55	2.24	2.50
Combined carbon	0.68	0.77	0.93	0.67
Total carbon	3.16	3.32	3.17	3.16
Silicon	1.48	1.52	1.40	1.56
Sulphur	0.054	0.014	0.04	0.095
Phosphorus	0.704	0.706	0.686	0.673
Manganese	0.97	2.43	0.973	0.943
Chromium	...	...	0.392	...
Nickel	...	...	...	0.746
Tensile strength as cast, tons per sq. in.	16.6	17.6	18.4	16.8

Campion and the author (Proceedings of Institution of British Foundrymen, 1921-22, Vol. 15, pages 211-231), in tests made on gray cast irons of different compositions, show that annealing for periods of 4 hr. produces no change until over 300 deg. C. is attained, when the strength decreases. Tensile tests made at temperatures up to 700 deg. C. show the strength to be maintained to 400 deg. C., after which it falls off rapidly. The strength after repeated heatings and coolings to 450 deg. C. and 550 deg. C. falls off to the extent of 25 per cent in the poorer qualities of iron and 15 per cent in the higher qualities.

The effect of the addition of special elements to cast iron has also engaged the attention of various investigators. The results of the experiments are dealt with collectively in Hatfield's chapter on "The Influence of Other Elements Upon Cast Iron" in his book on "Cast Iron in the Light of Recent Research," in Campion's (*Foundry Trade Journal*, September, 1918, Vol. 20, pages 467-470) paper on "Influences of Some Special Elements on Cast Iron," and in Smalley's (*Foundry Trade Journal*, December, 1922, January, 1923, Vol. 26, pages 519-522; Vol. 27, pages 3-6) paper on "Special Cast Iron." All these investigations have dealt with the effect of the special elements on the strength, hardness, structure, and casting properties of cast iron, there being practically no data as to how the irons behave under heat treatment.

The present experiments were carried out with a view to determining what effect low-temperature heat treatment had on a good cylinder iron and on irons of similar composition containing small additions of various elements.


Tons per Sq. In.
Degrees Centigrade
As Cast
Annealed for 4 hr. at 300 deg. C.
Annealed for 200 hr. at 450 deg. C.
Annealed for 200 hr. at 550 deg. C.

Tensile Strength of Cast Iron at Elevated Temperatures

The chemical analyses of the irons, together with their tensile strengths as cast, are shown in Table I. All the irons were cast at approximately the same temperature from cupola metal remelted in a crucible and cast into dry-sand molds 14 in. by 1⅛ in. dia., placed vertically. In the case of the special irons, the various ferroalloys were added to the metal in the crucible. All test bars broken during the experiments were machined bars of 0.5 sq. in. sectional area.

In the first series of experiments five bars of each iron were heated in an electric resistance furnace to a temperature of 450 deg. C. for 8 hr., allowed to cool overnight, then reheated the following day for the same period. At the end of every 40 hr. heating, or 5 days, a test bar was removed and its composition as regards total and combined carbon determined, together with its tensile strength and Brinell hardness. The results obtained are given in Table II.

In the second series of experiments the same procedure was followed, excepting that the bars were heated to 550 instead of 450 deg. C. The results of these experiments are given in Table III.

A third series of experiments was carried out to determine the strength of the cylinder iron P at elevated temperatures. A set of bars in the cast condition was broken at temperatures ranging from atmospheric to 600 deg. C. A second set, previously annealed for 4

*From an address, entitled "Some Experiments in Cast Iron," before the West of Scotland Iron & Steel Institute, published in the *Journal* of the institute for January.

hr. at 300 deg. C., was broken over the same range. A third set was annealed at 450 deg. C. for 200 hr., and a fourth set at 550 deg. C. for 200 hr. before breaking. In carrying out these experiments the bars were heated in an electric resistance furnace fixed on the testing machine, the temperatures being determined from thermocouples fixed to the top and bottom of the bars. Each bar was maintained for half an hour at the temperature determined on before breaking. The results obtained are given in Table IV and Fig. 1.

Table II.—Heat Treatment Experiments at 450 Deg. C.

Cast Iron	Duration of Heating in Hr.	Total Carbon	Combined Carbon	Tensile Strength 15 Deg. C.	Brinell Hardness
P	0	3.16	0.68	16.6 tons	223
	40	3.17	0.64	16.25 tons	212
	80	3.17	0.48	15.7 tons	197
	120	3.19	0.43	15.3 tons	183
	160	3.13	0.38	15.4 tons	183
	200	3.15	0.38	15.5 tons	179
M	0	3.32	0.77	17.6 tons	223
	40	3.29	0.74	...	217
	80	3.31	0.73	16.8 tons	197
	120	3.35	0.55	16.5 tons	183
	160	3.28	0.56	...	183
	200	3.33	0.54	16.4 tons	183
C	0	3.17	0.93	18.4 tons	248
	40	3.18	0.90	17.9 tons	235
	80	3.17	0.85	17.5 tons	212
	120	3.18	0.72	17.4 tons	207
	160	3.16	0.69	17.2 tons	201
	200	3.20	0.69	17.3 tons	207
N	0	3.16	0.67	16.8 tons	223
	40	3.18	0.18	16.0 tons	167
	80	3.18	0.09	14.8 tons	159
	120	3.16	0.08	14.8 tons	159
	160	3.17	0.07	14.7 tons	156
	200	3.15	0.07	14.7 tons	149

Consideration of the results obtained in the first two experiments shows that repeated heatings and coolings at temperatures of either 450 or 550 deg. C. for prolonged periods produce changes in the various irons. In each case the carbide is decomposed, the tensile strength falls off, and the Brinell hardness decreases. The degree of change varies for the different irons, and is more marked at 550 than at 450 deg. C. In Table V a summary of the results is given, showing the time required to produce stability and the percentage decrease in the combined carbon, tensile strength, and Brinell hardness at the end of that period.

Table III.—Heat Treatment Experiments at 550 Deg. C.

Cast Iron	Duration of Heating in Hr.	Total Carbon	Combined Carbon	Tensile Strength 15 Deg. C.	Brinell Hardness
P	0	3.16	0.68	16.6 tons	223
	40	3.13	0.12	15.8 tons	138
	80	3.16	0.11	15.1 tons	129
	120	3.15	0.09	14.8 tons	129
	160	3.15	0.12	14.6 tons	125
	200	3.14	0.12	14.8 tons	129
M	0	3.32	0.77	17.6 tons	223
	40	3.36	0.69	16.4 tons	187
	80	3.30	0.46	16.1 tons	171
	120	3.35	0.27	15.4 tons	159
	160	3.35	0.25	15.2 tons	148
	200	3.34	0.26	15.4 tons	148
C	0	3.17	0.93	18.4 tons	248
	40	3.16	0.57	17.9 tons	207
	80	3.22	0.53	17.4 tons	171
	120	3.20	0.49	16.8 tons	165
	160	3.15	0.51	16.4 tons	171
	200	3.21	0.49	16.4 tons	165
N	0	3.16	0.67	16.8 tons	223
	40	3.19	0.15	16.3 tons	163
	80	3.20	0.05	13.8 tons	138
	120	3.14	0.05	13.4 tons	134
	160	3.20	0.04	12.9 tons	129
	200	3.15	0.02	13.4 tons	129

On heating the cylinder iron at 450 deg. C. decomposition of the carbide takes place to the extent of 34 per cent, and is complete after 120 hr. heating. Further heating produces no additional change. This decomposition of carbide is accompanied by a decrease in tensile strength of 7 per cent, and in Brinell hardness of 18 per cent. Heating to 550 deg. C. causes the carbon to decrease to the extent of 82 per cent after 40 hr. heating, with a corresponding falling off in tensile strength and Brinell hardness of 11 per cent and 42 per cent respectively.

Increasing the percentage of manganese in the iron from 0.97 per cent to 2.43 per cent appears to increase the stability of the carbide. The manganese probably forms manganese carbide, which crystallizes with the iron carbide, forming a double and more stable carbide.

Chromium and Nickel Additions

The effect of the addition of the small amount of chromium, 0.392 per cent, is similar to an increase in the manganese, but to a greater extent, by rendering the carbide still more stable both at 450 and 550 deg. C. Chromium appears to affect the carbide in a similar way to manganese by crystallizing with the carbide. The percentage decreases in tensile strength which take place at 450 and 550 deg. C. respectively are similar to those obtained with the cylinder iron. The chromium iron, however, has a higher initial tensile strength, and even after prolonged heating at 550 deg. C. the final tensile strength is similar to that obtained in the cylinder iron as cast.

The addition of nickel produces little effect on the iron in its cast condition, but has a marked effect when the iron is heated even at 450 deg. C. It produces at this temperature rapid decomposition of the carbide to the extent of 87 per cent, and at the higher temperature decomposition is almost complete.

Table IV.—Strength at Elevated Temperatures

Temperature, Deg. C.	As Cast. Tons per Sq. In.	Annealed for 4 Hr. at 300 Deg. C. Tons per Sq. In.	Annealed for 200 Hr. at 450 Deg. C. Tons per Sq. In.	Annealed for 200 Hr. at 550 Deg. C. Tons per Sq. In.
15	16.6	16.8	15.5	14.8
100	16.1	16.5	14.9	13.8
200	15.8	16.7	14.5	13.6
250	15.2	...	...	...
300	14.9	16.7	13.8	12.4
350	15.7	...	...	...
400	16.5	17.1	13.0	11.0
500	15.1	15.8	12.2	10.4
600	11.7	12.0	7.6	4.8

The experiments carried out on the strength of the cylinder iron at elevated temperatures show that if an iron is to be used for purposes in which it is heated to temperatures of 450 deg. C. and 550 deg. C., such as may occur in the piston-head of an internal-combustion engine, the tests obtained in its cast condition cannot be taken as representative of the strength of the iron.

Referring to the illustration, the curve of tensile strength of the iron in its cast condition shows a minimum at 300 and a maximum at 400 deg. C. A short annealing at 300 deg. C., such as castings are frequently subjected to, gives a slightly improved tensile strength and a more uniform curve. The maximum tensile strength of 17.1 tons per sq. in. occurs at 400 deg. C. Subjecting the iron to repeated heating and cooling for 200 hr. at 450 and 550 deg. C. produces, as previously indicated, changes in the composition of the iron, with the result that when the iron is tested at elevated temperatures a considerable diminution in strength is found. Tested at 400 deg. C. after prolonged heatings at 450 and 550 deg. C., tensile tests of 13.0 and 11.0 tons per sq. in. are obtained. These represent decreases

Table V.—Percentage Changes Produced by Heat Treatment

Cast Iron	450 Deg. C. Duration of Heating in Hr.	450 Deg. C. Combined Carbon Decrease, Per Cent	450 Deg. C. Tensile Strength Decrease, Per Cent	450 Deg. C. Brinell Hardness Decrease, Per Cent	550 Deg. C. Duration of Heating in Hr.	550 Deg. C. Combined Carbon Decrease, Per Cent	550 Deg. C. Tensile Strength Decrease, Per Cent	550 Deg. C. Brinell Hardness Decrease, Per Cent
P	120	34	7	18	40	82	11	42
M	120	27	6	18	120	67	12	33
C	120	25	5.5	16	80	46	11	31
N	80	87	12.0	30	80	94	18	40

of 21 per cent and 27 per cent respectively on the strength obtained at the same temperature when tested in the cast condition.

Conclusions

The conclusions to be derived from the foregoing experiments may be briefly stated as follows:

1. Low temperature heat treatment of cast iron produces decomposition of the carbide, with corresponding decreases in the strength and hardness. The amount of decomposition varies with the temperature and increases with increasing temperature.
2. Increasing the manganese content of the iron produces a more stable carbide with less tendency to decompose when heat treated.
3. The addition of a small amount of chromium has a still greater effect in stabilizing the carbide.
4. Nickel in small quantity diminishes the stability of the carbide and produces rapid decomposition on heat treatment.

The author desires to thank the directors of Scotts' Shipbuilding & Engineering Co., Ltd., Greenock, for permission to publish the data obtained in the experiments.

Discussion

The chairman, Edwin H. Lewis, said that it was quite clear to him, certainly in his own experience, that the makers of Diesel engines did not have a very clear idea of what iron they wanted, and to the blast furnace people it would be very gratifying if the Diesel engine makers would specify an iron suitable for their purpose. For instance, three foundries recently specified to his firm an iron suitable for Diesel engines; but the three analyses were absolutely different. One of them wanted manganese under 1.2 per cent; another wanted manganese with a minimum of 2.0 per cent; and the third wanted manganese over 1.2 per cent.

Mr. Anderson said that the point which struck him first was, having reference to Table I, that manganese at 2.43 per cent would make what, from the foundrymen's point of view, they should call dirty iron. What he meant by this was that the foundryman in ordinary practice could not skim an iron clean when the manganese went over 1½ per cent. The formation of manganese sulphide, he understood, was accountable for this; it had about the same melting point as cast iron, and there was very little difference in specific gravity. The result was that the iron was almost set before this slag ceased to rise in the ladle. The next thing was that this 2.43 per cent of manganese would appreciably alter the contraction and so increase the difficulty in getting sound castings. He should like to ask Mr. Donaldson if the annealing, in any measure, brought that back to normal shrinkage. Another thing—about the 0.4 per cent of chromium, he should like to know what effect that had upon the casting, how it affected contraction, and if its combination with the sulphur would act similarly to manganese. When he referred to the slag coming from high manganese pig iron, he referred to iron when melted in the cupola with coke having sulphur in the neighborhood of 1 per cent.

Dr. A. L. Mellanby said that under normal conditions the temperatures in the Diesel engine cylinder were not so high as one might imagine, and, in the light of their present knowledge as to what cast iron to use, these conditions were not such as to give serious trouble. The difficulty arose when they came to deal with abnormal conditions in that engine. He did not know whether they were aware of it or not, but at a meeting held some time ago in Glasgow there was a discussion on Diesel engines, and one of the speakers explained how it was that the pistons of one Diesel ship had cracked while she was proceeding through the Suez Canal. Under normal conditions the temperature in these water-cooled pistons was not at all high; but, in going through the Suez Canal, where the engines had to work very slowly, the cooling system evidently did not work. The pistons were normally supposed to be half full of water, and the cooling was carried out by the water dashing against the metal on the down stroke. In going through the Suez Canal at slow speed this inertia effect did not come into play, consequently it appeared that the water never got to the top of the piston, and, after having gone at slow speed for a time, the heads got hot. Then the engine was speeded up to about 70 revolutions, and the cold water striking the head caused four of the pistons to crack. Although this was an extreme case, and the conditions described would probably be avoided in the future, yet it might serve as an illustration of the fact that every possible provision should be made for the abnormal case.

He was glad that Mr. Donaldson was carrying on these tests, with the addition of chromium and nickel and some of the other rare materials. So far as he could see, from a hasty glance, the addition of the chromium seemed to be promising, since it put up the strength 1½ to 2 tons, an amount which, if they were getting to a critical condition, was quite appreciable, and might make all the difference between great success and failure.

Vanadium and Other Alloys

Mr. Donaldson said that, dealing with the question of manganese, they would get specifications with manganese varying from 0.75 per cent to 1.5 per cent. Regarding the effect of vanadium, he had carried out experiments with that element; but he had not included any results in the present paper, because the results he got were rather different from what had already been published, and before going any further he wanted to confirm his results. Replying to Mr. Anderson's question about high-manganese iron, he had not had any experience of casting this iron, with the exception of these experimental bars, and he might say that those particular bars were quite clean. With regard to the question of manganese and contraction, he could not give an opinion as to whether annealing would remove the shrinkage.

With reference to chromium iron, the author said he had no experience in casting chromium iron except in the case of those bars, and could not say how chromium would affect the shrinkage. The whole question of casting and manufacturing special irons, such as chromium and nickel, was purely in the experimental stage, and would require further investigation. These experiments were carried out with the view of settling the much-disputed point as to how those special elements were going to affect cast iron. Everyone said, "Try special elements." They seemed to think that one could get the same results in cast iron with special elements as in steel; but anyone who had added special elements to cast iron knew that they would not get the same results. He had shown in this paper that chromium affected the iron favorably, while the nickel had rather an adverse effect. He saw someone suggesting that they should try a nickel-chromium cast iron, but he thought that the one element would neutralize the other to some extent. This work was undertaken with the view of trying to get some definite information on the effect which these small percentages of special elements had on cast iron, and the work was being continued with that object in view, and an opportunity might occur later of submitting some of these results to the Institute.

Steel Employee Wages in Second Position

According to a compilation by the National Industrial Conference Board, New York, the newspaper and magazine printer has the largest average pay envelope of any of the regular manufacturing employees of the country. His present weekly wage of $36.14 compares with $17.44 in 1914. The iron and steel industry maintains second position, with the average earnings for all employees of $33.57 per week in April, compared with $34.83 in March. Ten years ago the average was $14.96 a week. The falling off in April was characteristic of all industry.

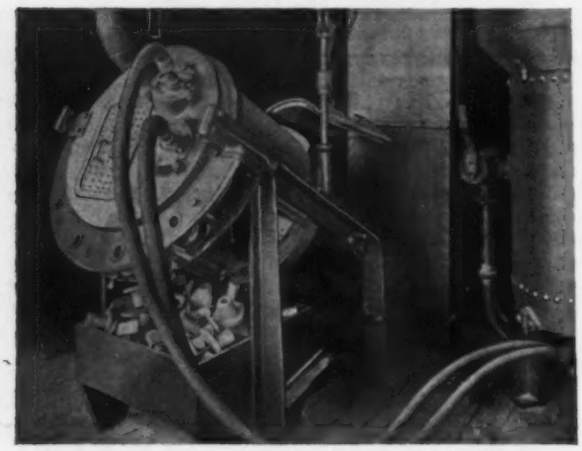
Third in rank is the automobile factory workman, whose average for April was $31.12 a week, comparing with $15.09 in 1914. Following are the book and job printers with $31.01, and the foundry and machine shop workers with $28.88, the latter comparing with $13.61 ten years ago.

Production of an oil furnace with electric control will be started July 1 by the Robbins & Myers Co., Springfield, Ohio. It is to be made for the Standard Oil Co., of New York, for use in homes.

Sand Blast Mill for Cleaning Small Pieces in Quantity

What is known as the positive pressure Slyblast mill, intended for the cleaning of small forgings, stampings and castings in large quantities, is being marketed by the W. W. Sly Mfg. Co., Cleveland. The machine, which is shown in the accompanying illustration, is a combination of the tilted mill and a positive pressure sand blast tank and is offered in three sizes, the No. 00, measuring 48 x 42 in., the No. 2, 30 x 30 in. and the No. 4, 20 x 20 in., inside dimensions.

The barrel is tilted as shown and is arranged to



A Load of 87 Bearing Brackets Weighing 600 Lb. Was Sandblasted In 15 Min. The load is emptied by turning the barrel with door facing downward, the work dropping into receptacle below

revolve slowly, continuous agitation being said to be given the load, exposing all surfaces of each piece to the direct force of the blast. A patented conical bottom plate is a feature. The blast nozzles are arranged to point directly into the center of the load, a position intended to permit the stream of abrasive to strike where the depth of the load is greatest. Spent abrasive is returned for immediate re-use by means of an elevator to the screened hopper.

In sandblasting the bearing brackets shown in the illustration in the tote box below the machine, the time required was 15 min. The machine employed was the No. 2, which has a barrel diameter of 30 x 30 in., inside measurements. Each bearing bracket weighs 7 lb. and 87 of them, weighing 600 lb., were loaded into the mill. The air pressure used was 60 lb. with 5/16 in. air orifices in the nozzle. When the sand blasting of the work is finished the barrel is turned with the door facing downward and the load dropped automatically into the receptable below.

A 1550 lb. load of annealed malleable iron castings weighing from 5 to 7½ lb. each, is said to be cleaned in 20 min. in the No. 00, 48 x 42 in. machine. The pieces were chunky but with some recesses. Approximately 60-lb. air pressure was used with 5/16-in. air orifice. Another malleable foundry equipped with two machines of this size is said to be cleaning 25 tons of small castings per 9½-hr. day, or 12½ tons per mill per day.

Supporting a complaint of the Apollo Steel Co., Apollo, Pa., the Interstate Commerce Commission in a decision made public last Saturday held that the freight rate of 27.5c. per 100-lb., charged on shipments of spelter in November, 1920, from Locust Point, Baltimore, to Apollo was unjust and unreasonable to the extent that it exceeded 23c. and that for the future the rate will be unreasonable to the extent that it exceeds 16c. per 100-lb. The new rate is to become effective not later than Aug. 5.

British railroads in 1923 had total receipts of £225,209,015 and expenditures of £176,961,120.

Bending Rolls Improved

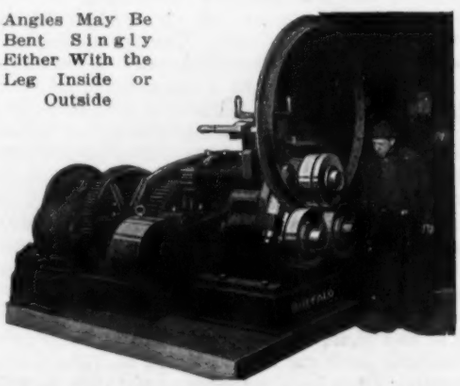
A newly designed train of steel rolls which permit the bending of angles, singly, either with the leg inside or outside, is one of the major improvements of the No. ½, No. 1 and No. 2 bending rolls of the Buffalo Forge Co., Buffalo. In the previous design angles could be bent with the leg inside only by placing the angles in pairs with the backs bolted together and with the use of flat rolls.

Easier and more even adjustment of the rolls in bending is intended by replacing the springs supporting the top roll and bearing with a counter-balanced lever. Less pressure is said to be needed by the operator to regulate the rolls, wear on the controlling mechanism being at the same time reduced. A new spacer arrangement is provided on all three rolls to facilitate adjustment of the spacing of the rolls to take care of the thickness of leg on the angle and tee. Binding of the leg is said to be prevented, regardless of size.

The same rolls may be employed for narrow flats, and to overcome any tendency of the iron to bend sideways, two inclined guide rolls are provided on either side. These must be removed when bending tees. The smallest machine of the series, the No. ½, is not reversible. The two larger units are equipped with reversing clutch pulleys, which permits of passing the work through in either direction. All gears are above the floor level, eliminating the necessity for excavating when installing the machine.

The machines are adaptable to a wide variety of work. Angles, tees, channels, I-beams, flats, rails, wrought iron pipe and odd sections can be rolled into rings. Rolls for bending annealed copper tubing without filling them with resin are also available, a set of rolls being required for each size of tube.

Angles May Be Bent Singly Either With the Leg Inside or Outside



The bending cold of 72 angle iron rings, 42 in. in diameter and of 3 x 3 x ⅜ in. stock, in 3 hr. is claimed for the No. 2 machine, the time taken in the adjusting of rolls being included.

Coke Output in May

WASHINGTON, June 24.—Production of by-product coke in May totaled 2,786,000 net tons against 3,010,000 tons in April, while the output of beehive coke declined from 1,079,000 tons in April to 761,000 tons in May, according to the Geological Survey. The decrease is attributed principally to the curtailed output of pig iron. In terms of per cent, the decrease was sharpest for beehive coke, next for pig iron and last for by-product coke. The average daily production of by-product coke was 89,855 tons, as against 100,326 tons in April, a decrease of 10.4 per cent. Of the 71 plants in existence, 66 were active and five were idle. The ratio of capacity was 74.5 per cent.

The statement of the Geological Survey shows that of the by-product coke produced in May, 2,226,832 tons, or 80 per cent, were made at steel works and merchant furnace ovens, while 20 per cent, or 558,678 tons, were produced by merchant ovens.

ELECTRIC STEEL IN BRAZIL

Pig Iron, Made Electrically, Converted Into Steel —Two Rolling Mills

AN account of the first electric steel plant in Brazil, which was recently built in order to utilize economically a certain amount of surplus electric current, appears in the *Ironmonger* (London), April 26. The name of the company is Campania Electro Metallurgica Brasileira, located at Ribeirao, Preto, a small town in the center of the electrical producing area and about 250 miles inland from Santos. The plant is completely operated by electricity and pig iron, steel and rolled products are made.

The iron ore, obtained about 75 miles distant from Morro do Ferro, is a large deposit covered with broken ore having an iron content of 65 to 70 per cent. Large quantities of this ore are described as available at the mere expense of transferring it. Steel gondolas with swinging side doors take the ore from the mine to jaw crushers which reduce it to lumps about 2 in. in diameter. A jib crane, with suspension scales and scoop, conveys the ore and limestone to the charging bell of the electric pig iron furnace, the charcoal being carried on an aerial tramway to the furnace top in 250 lb. boxes. About 60 charges of approximately 1 ton each are made each day, working with a single bell.

The Electric Furnaces

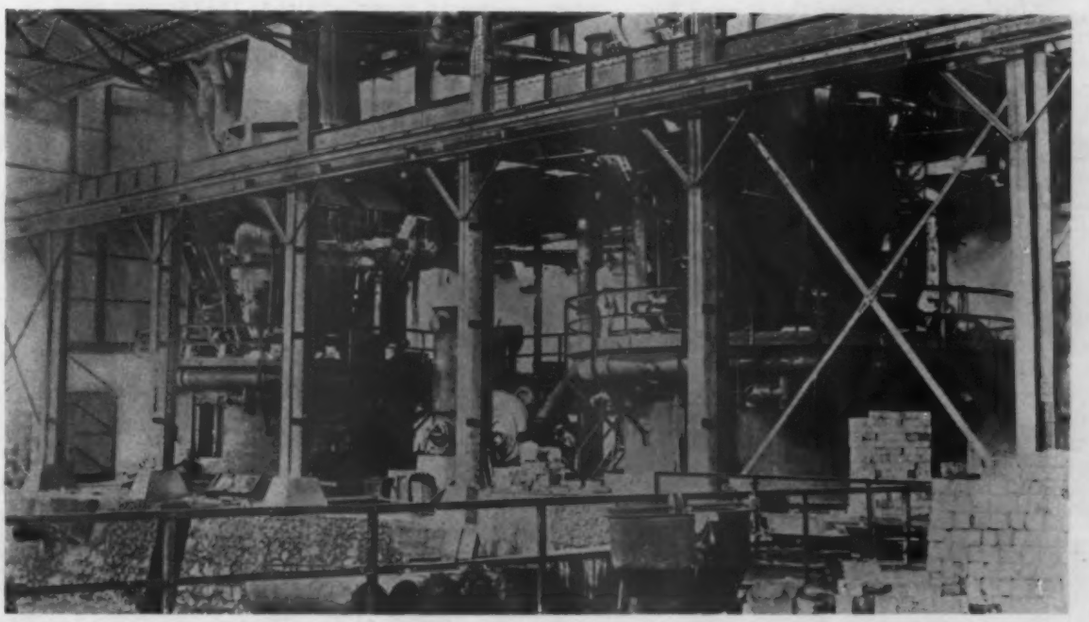
The present limitations of the plant are 5000 kilovolt amperes, but a new power house, capable of developing 12,000 kilovolt amperes, is under construction, and the plans provide for further extension. The following machinery is installed:

	Kva.
Two Swedish type furnaces, one stand-by	3,000
Two 6-ton Bessemer converters (blowing engine for one)	700
One 6-ton Ludlum steel furnace, maximum	1,500
One 16-in. rolling mill	500
One 10-in. rolling mill	500
Miscellaneous 220-volt power for motors, cranes, shops, and lighting	400

Electrical current, received at 30,000 volts, 50 cycles, 3-phase, is transformed outdoors to 6000 volts and taken by underground lead-covered cables to the substation. The pig iron furnaces have each 1500 kva. water-cooled transformers, the secondaries delivering any voltage from 60 to 120 smooth curve regulation. Each furnace has six 24-in. carbon electrodes. The same phase connects all adjacent electrodes; thus for phases denoted by A, B, and C, reading around the circle, the connection is A, A; B, B; C, C, making busbar connections easy, providing necessary opportunities for interlacing between transformer and electrode, and producing an excellent power factor.

All units cannot be simultaneously operated, the design being not so much for balanced operations as to form the basis of a larger plant, the series of units being of sufficient magnitude to work economically and successfully. The pig iron furnaces can be advantageously tapped several times daily, each tap yielding about six tons. Should "doctoring" be necessary before casting, the iron is removed in molten state to the Ludlum furnace, where the required slag is made up, deoxidizers and carburizers added, and then cast. Cold,

A 26-In. Soderberg Electrode in a 4000-Kw. Electric Pig Iron Furnace, "Elektrometall" System, in the Brazilian Steel Plant



Two Large Electric Iron Smelting Furnaces of the "Elektrometall" System in the Brazilian Steel Plant.
Both photographs by courtesy Electric Furnace Construction Co., Philadelphia

low silicon pig is reheated in this furnace and the amount of ferrosilicon added before the blow.

The Converters

The steel, made in Bessemer converters, requires 0.75 to 1 per cent silicon to provide the heat necessary during conversion. So that there may be residual manganese the iron is blown with 1.5 to 2 per cent manganese (procured in the country). Since it is impossible to tap hot silicon iron at all times, the Ludlum furnace will be utilized to increase the temperature and adjust the chemical composition of off-runs before conversion.

Of the two 6-ton Bessemer converters, one is kept for emergency. To conserve heat between blows the mouths of the converters, which are hooded, are somewhat small compared with those used where operations are quicker. Overhead cranes and ladles transfer the hot pig iron. Only one blowing engine, driven by a 6000-volt, 700-kva. synchronous 3-phase motor is installed, being used about two hours daily.

Blown steel is recarburized in the vessel, and the residual manganese greatly reduces the necessary deoxidizer. No stripper is required, the steel being discharged into a 6-ton ladle and poured into ingot molds 7 in. square and 4 ft. high, large end up.

An emergency equipment of a 6-ton electric steel furnace is provided, always ready to reheat cold pig, reclaim mill scrap, or make alloy metal or steel castings. The furnace is 3-phase with its three electrodes in a row, an oval-shaped accessible hearth, heavy doors at each end, and removable roof. It is commanded by a 6-ton crane alongside the converter. The necessary electrical equipment is one 1500-kva. transformer, located in the adjacent substation.

The Rolling Mills

In the rolling mills ingots are reheated in a long furnace which, in its three burners, uses all excess gas or oil, should both furnaces be idle. The furnace is fed by a simple pusher. Two conventional type merchant mills have been installed. The roughing stand is a 3-high 16-in. mill which reduces the ingot to a 2-in. square. The finishing is done in a 10-in. mill, standing 3-high, the finishing stand being 2-high.

The company is entirely financed by Brazilian capital, the technical staff and expert steel foremen having been imported from Europe and America. Its plant is primarily the outcome of the necessity to utilize the surplus current of the Empreza Forca e Luz de Ribeirao Preto, a company which serves numerous coffee plantations. The coffee season extends over the dry months only, and the company was unable to employ the current during the remainder of the year.

Brazil's annual steel requirements are, however, approximately 40,000 tons of bar steel and 135,000 tons of other products, practically all now imported.

Operation Costs of Reheating Furnaces Reduced

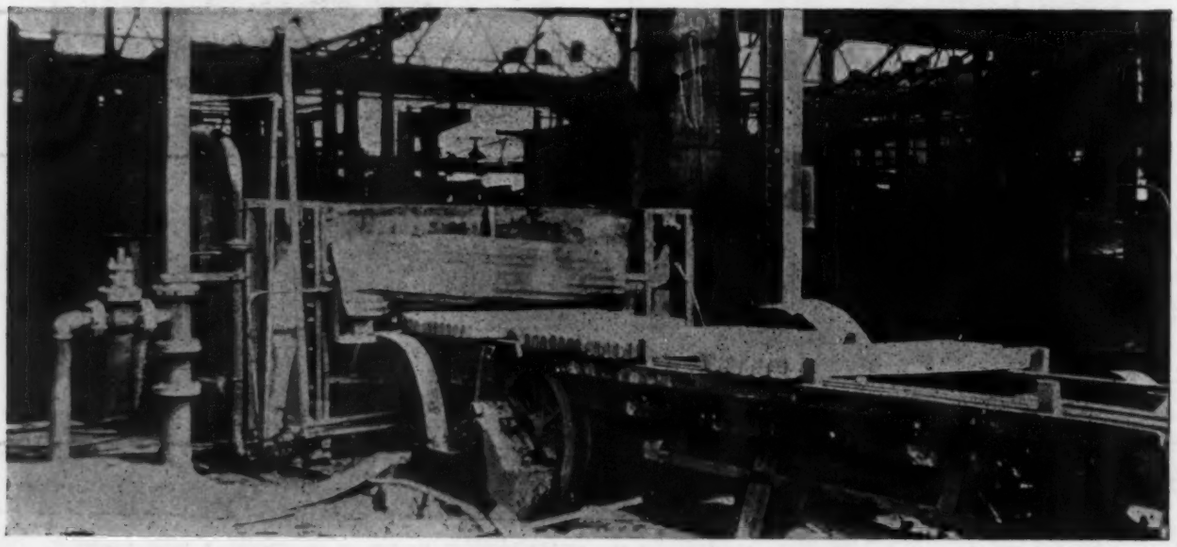
Installation of Burners for Coke Oven Gas in Which Air Proportion Is Maintained Automatically

BY HENRY L. READ

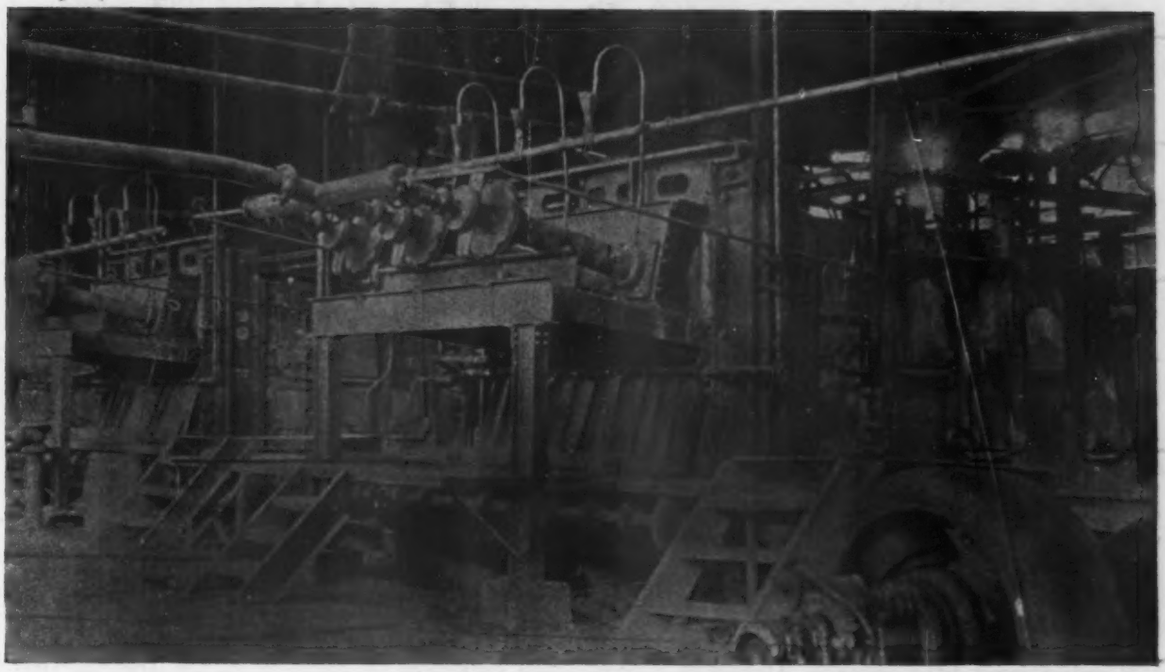
INSTALLATION of a modern firing system on a battery of four reheating furnaces is a feature at the plant of the Gulf States Steel Co., Gadsden, Ala. Fig. 1 shows the charging end of one of these units, with its chain pusher for 4 x 4 in. x 5 ft. billets. Fig. 2 illustrates the discharge end, in the upper part of which are mounted three large velocity burners furnished by the Surface Combustion Co., New York. Below the burners are the cast iron flap doors through which the steel drops to a roller conveyor. At the right appear some of the poking doors along one side.

Steel progresses through the furnaces on an upward slope and the hot gases from the burners flow counter current to the work, partly above and partly below it. The usual water-cooled skid rails carry the load in the hot zone. The approximate inside dimensions of each furnace are 45 ft. long x 9 ft., 6 in. wide x 4 ft. high at spring of arch at discharge end and 2 ft. high at spring of arch at charging end. The walls are 18 in. thick and the arch 9 in. and, as with most steel plant furnaces, carry no insulation.

Originally these four furnaces were regeneratively fired, two with 500 B.t.u. coke oven gas and two with dirty producer gas. All were pushed to maximum capacity at all times to keep up with the mill, which took the steel down to rods and wires for miscellaneous sizes of nails. The result of this situation was that necessary minor repairs to the furnaces could be made only during week end shutdowns, with labor at "time and a half." If any considerable work was involved,



Charging Skids at Rear of Furnace, with 4-In. Billets 5 Ft. Long Which Are Pushed Up-Grade Through the Continuous Furnace by the Lugs Shown on Chain Drive



Delivery End of Furnace Showing Three Burners for Coke Oven Gas Supplied from a Single Gas Header and Water Cooled. Automatic proportioning of gas and air is a feature

production was curtailed until the furnace could be put back into use. Furthermore, four producers were constantly in service to supply two furnaces, requiring a crew of eight men per 10 hr. turn for coal handling, ash removal, charging, poking, etc. Any difficulties in the producer plant were immediately reflected in the furnaces by loss of output.

Conditions were such that replacement of the producer gas for this operation by coke oven gas was desirable, but no additional coke oven gas was available. Study of the various possibilities, however, led to the belief that enough coke oven gas could be saved by the proposed new equipment to enable the entire department to operate on this fuel.

The new burners are operated on gas at 10 to 15 lb. per sq. in., supplied from three Ingersoll-Rand duplex compressors, 8 x 12 in., each driven by a 75-hp. motor. No air under pressure or air piping is required, since the gas is made to entrain from the atmosphere all air necessary for combustion. The burner design is such that correct proportions of air and gas are maintained automatically constant without attention by the furnace operator, no matter what the rate of gas flow may be or how the pressure varies. The regenerators were cut out, as much better results were so obtained. No reconstruction on the furnaces was undertaken, the only changes being to cut the holes for the burners and to seal the passages to the checker chambers.

Operating Results

Results of operations show monthly average gas consumption per gross ton of finished rods and wires at approximately 4200 cu. ft., with the steel discharged at a temperature of about 2300 deg. Fahr. This high temperature is necessary continuously for the work. It is expected that consumption will be reduced later when the furnaces, which are in poor condition from long use before the alterations, are rebuilt. Owing to the great reduction effected in gas consumption, all four furnaces were operated on less coke oven gas with the new burners than two of them originally required. But it was quickly discovered that, because of the improved control over combustion, three furnaces could be made to do easily the work four formerly had done with difficulty. As now operated, each furnace turns out between 9 and 10 gross tons per hour of finished rods and wires. The fourth furnace is a spare.

The installation was made under the direction of Harry Dobrin, consulting fuel engineer Gulf States Steel Co. Charles E. Bowron is chief engineer and F. R. Thompson, works manager.

Portland Cement Manufactured in 1923

Geological Survey reports show the production of Portland cement in 1923 to have been 137,460,238 bbl., compared with 114,789,984 bbl. in 1922. Each year was in turn a new high record. The number of active plants increased from 118 in 1922 to 126 in 1923. Pennsylvania produced the largest amount, with 33,276,093 bbl. in the earlier year and 38,157,482 bbl. last year. California made 11,001,910 bbl. in 1923, compared with 8,711,515 in 1922. Michigan in 1923 produced 7,619,792 bbl.; Missouri, 7,305,997 bbl.; Illinois, 7,147,906 bbl.; New York, 6,990,174 bbl.; Kansas, 6,025,657 bbl.; Iowa, 5,732,470 bbl. Every producing State reported an increase, these varying from 8 to 53 per cent, with an average of 20 per cent.

Shipments in 1923 aggregated 135,912,118 bbl., valued at $257,684,424, or an average factory price of $1.90, compared with $1.76 in 1922. These shipments included 1,208,805 bbl. for export, leaving 134,703,313 bbl., or 1.21 bbl. per capita, as United States consumption. New York led with 15,881,436 bbl., followed in succession by Illinois, 12,237,478 bbl.; Pennsylvania, 11,281,290 bbl.; California, 10,373,163 bbl.; Ohio, 8,843,641 bbl., and Michigan 7,631,664 bbl. No other State exceeded 5,500,000 bbl. Per capita consumption was greatest in California, with 2.69 bbl., and least in Mississippi, with 0.26 bbl. None of the Southeastern States, with the exception of Florida and North Carolina, reached as much as 1 bbl. per capita.

A notable German publication has been made by the Verein Deutscher Ingenieure in its issue of the *Zeitschrift* for May 31, commemorative of the general meeting at Hannover this year. The reading contents have largely to do with airships and flying machinery, while the advertisements cover 422 pages with a large number given over to the industrial establishments in the Hannover region.

Work is under way at East Youngstown on the relining and enlarging of C blast furnace in this group of the Youngstown Sheet & Tube Co. It will be enlarged to a 600-ton stack. The work is being carried forward by the company's own organization.

Improvements in Press Building Shop

New Works of V & O Press Co.—Motor Drive Improvised for Belt Driven Planers—Novel Running-In Outfit

THE new shop at Hudson, N. Y., of the V & O Press Co., manufacturer of power presses and sheet metal working machinery, has been designed and laid out on the modern lines of continuous progress from incoming raw material through the shop without back tracking. Rough castings and forgings of larger size are held in yard storage to the rear of the plant. They are drawn as needed for the machine departments for orders in process, or to build up finished stock.

The building is of monitor construction. The center bay is equipped with cranes of sufficient capacity to handle the largest completed machines in the company's line. At the lower end of the shop in this bay are placed the planers, boring machines, large radial drills, etc., which are used in machining the heavy parts.

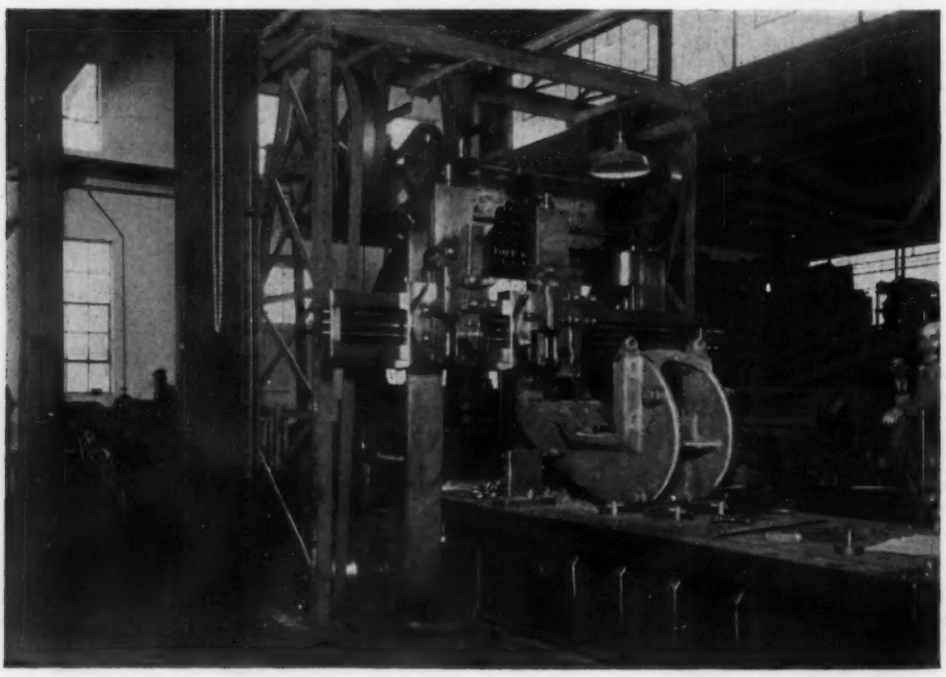
While many of the machines in the new plant are new and of latest improved type, intended to reduce manufacturing costs, it has of course been necessary to make use of most of the older machines formerly in use in the company's old plant at Glendale, L. I. This group includes a battery of belt-driven planers. Inasmuch as these machines are placed in the main bay, there was no proper way available for hanging their countershafts without interference with the cranes. Further the planers are placed longitudinally, so that it would not be possible to run a line shaft without crossed belts to each countershaft.

To overcome these difficulties each planer is individually driven. Instead of mounting the motor and countershaft on improvised brackets on the machine itself, a structural stand has been built around the housings, and this carries the motor and countershaft, the latter being driven by silent chain. This arrangement makes for a compact outfit, avoids long belts and high countershafts, does not convey any undue vibration to the planer and avoids any possible interference with the cranes. It has practically all the advantages of the standard belted motor-driven planer found in shops all over the country.

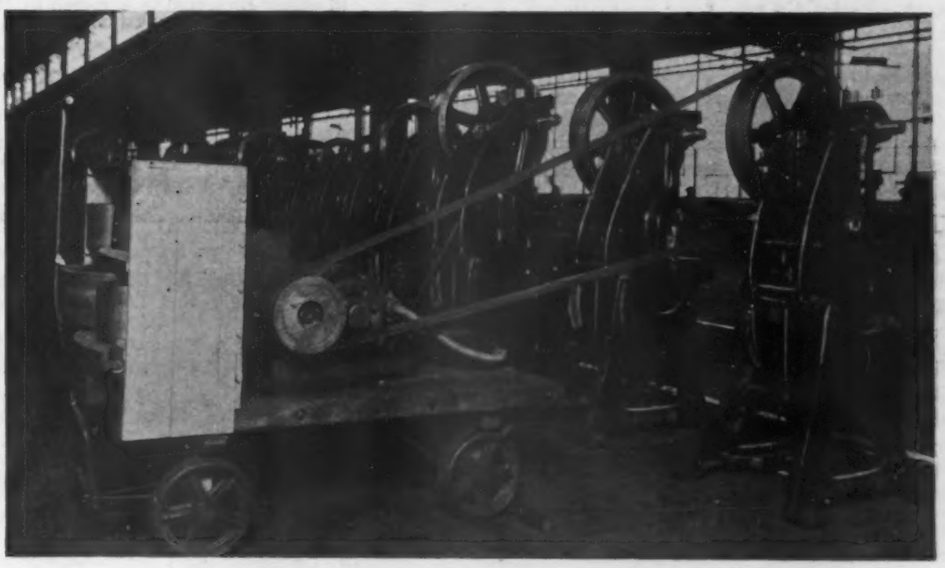
At the rear of the shop, facing toward the front, are found on the right a storage room for smaller rough stock, and in the left bay the machine department for smaller work. Just outside of the left bay beyond the machine department is the heat treatment department. The side bay lends itself well to belt-driven machines and is equipped with hoists for handling pieces too heavy to be lifted by hand. In the right bay center are dressing rooms for the men and beyond a department for demonstrating automatic machines, with hopper, roll and dial feeds, and the tool room.

Beyond the small machine department is the finished stock room for parts. From the large and small machine departments and finished stocks, parts converge toward the assembly floor, which is in the main bay with overflow into the left bay. Here machines are completely assembled, if for prompt shipment. If they are being built for stock, they are assembled complete except for the crank, which is left blank, although the remainder of the shaft is finished. This is done so that the crank may be machined to give the particular throw desired by the customer within the limits of the machine.

After assembly each machine is given a running-in test, under inspection and with frequent oilings. To accomplish this work several portable outfits are in use, these being more readily moved to the press than to move the press under a line shaft in fixed position. These portable outfits are mounted on ordinary four-wheeled hand trucks and consist of a motor with gear reduction to the driving pulley. On one end of the



Belt Driven Planers Brought to the New Shop From the Old Have Been Converted to Motor Drive. This has been accomplished by building structural stands on which are mounted motor and countershaft. This arrangement avoids interference with the traveling cranes as no line shaft nor long belts are necessary



To Assure Proper Alinement of All Parts After Scraping and Assembly Each Press Is Run In. This test is made with a portable power plant, which may be plugged in at convenient light sockets. Any bearings which heat unduly show in this test and may be corrected before shipment

truck is a cabinet in which is a variety of pulleys of different sizes to provide proper pulley speeds for various press flywheels and speed requirements. Power is secured by plugging in at conveniently located sockets.

Just beyond the assembly and test floor is the shipping department.

HORNSEY DIRECT PROCESS

Steel from Ore Being Made in England by an American Metallurgist

BY A. C. BLACKALL*

WIDE interest has recently been aroused in Sheffield by successful experiments carried out by the Hornsey Iron Co., Worksop, England, and the Sheepbridge Coal & Iron Co., Chesterfield, with a new low-temperature iron reduction process. These two firms, working in cooperation, have experimented at a cost of between $150,000 and $200,000 with the process, and they claim the results achieved have been entirely successful.

Rapid progress is being made and statements recently made by John W. Hornsey, who is carrying out experiments with the process at Sheepbridge, near Sheffield, have aroused the greatest interest among English ironmasters. Mr. Hornsey for many years practised as a consulting engineer in New York and, becoming interested in the direct reduction of iron ore, conducted numerous experiments with that object in view. He arrived in Great Britain about two years ago, when he had succeeded in bringing the process beyond the laboratory or academic stage.

British ironmasters were so interested in his process that he had his choice of some half dozen firms with which to deal. He selected the Sheepbridge Coal & Iron Co. of Chesterfield, which built works at Sheepbridge for demonstration purposes. Although a start was made in March, 1922, the first actual operation with iron was carried out in January, last year. Instead of an expensive metallurgical coke, Mr. Hornsey uses a low-grade slack coal for the purpose of conversion, and claims that, on a fair average for the same charge of ore, he needs only from one-half to two-thirds as much common raw coal as the blast furnace uses of high-grade metallurgical coke. He further states that the installation cost of his plant for any given tonnage is approximately one-third that of a blast furnace of the same capacity, and declares that he can take ore of the lowest grade (a matter of great importance in England, in view of the exhaustion of many of her high-grade deposits) and can handle it independently of any mixture, foreign or otherwise. He says he can save at least $5 per ton on the production cost of iron.

Concerning the quality of steel made from the product of this process, typical examples of many high grades of steel have been made which, upon subjection to standard tests of every description by noted and independent authorities, showed results far superior to ordinary steel (the results are even claimed to be better than the best Swedish steels). The iron from which these steels were produced was made from the lowest grade of English iron ore. Mr. Hornsey has found no difficulty in making an iron sufficiently low in phosphorus and sulphur for all practical purposes. The impurities contained in ordinary iron and steel result from the absorption of these impurities and other ingredients of the ore while the iron is molten, and as in this process the iron is neither softened nor melted, it is essentially pure, the impurities being rejected along with the waste products or dross. It is also interesting to note that neither limestone nor any other fluxing ingredient is employed in the process.

The secretary of the Sheepbridge Coal & Iron Co. was reticent regarding the process itself, but informed the writer that: "We are concerned with this matter only as providing facilities for the plant and a portion of the capital for the Hornsey Iron Co."

The unquestioned standing of these two concerns in the British iron and steel world, however, is sufficient to stamp the new process as one of the most important developments of recent years.

*28 Howitt Road, Belsize Park, London, England.

To be used in connection with impact tests of welded rail joints, which it is conducting with the support of the American Electric Railway Association, the Bureau of Standards recently placed an order for an anvil weighing 16,000 lb. It is the hope that as a result of the work, which includes an elaborate series of tests designed to duplicate service conditions, the most efficient type of joint can be determined.

Steel-furniture stock goods shipments amounted to $1,505,367 in May as against $1,658,610 in April and $1,506,072 in May, 1923, according to reports received from 22 manufacturers by the Department of Commerce.

Power Rapid Traverse an Added Feature of Production Lathe

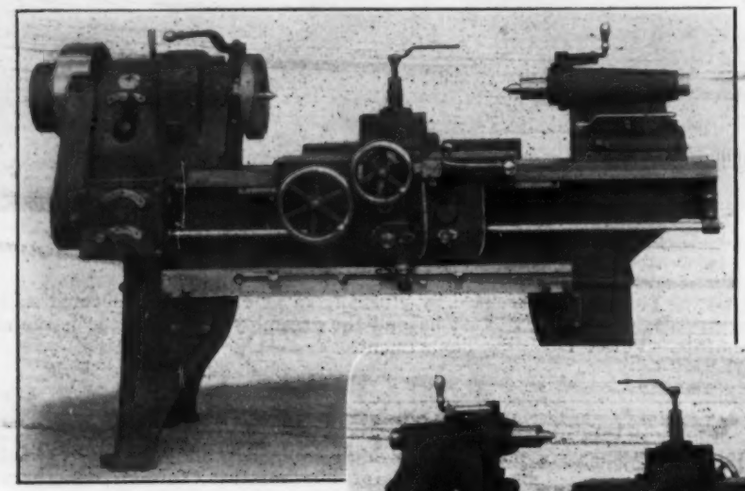
Rapid power traverse, emphasized as a means of increasing production through added convenience to the operator, is a feature recently added to the 17-in. heavy-duty geared-head rapid production lathes of the R. K. LeBlond Machine Tool Co., Cincinnati. The device permits the operator to approach the cut quickly and to return the carriage to the starting position by power.

The arrangement of the mechanism, which is simple, may be noted from the accompanying illustrations. Both feed and traverse are controlled by a convenient lever, the movement of which in a horizontal plane serves to engage and disengage the feed. Movement of the lever in a vertical plane engages the two directions of traverse with a neutral position to which the lever returns automatically as soon as the pressure in either direction is released. The feed positions are located by a spring plunger. In this capacity it performs the function of the feed clutch lever on the company's regular lathe, as it simply engages and disengages the positive feed clutch. The feeds and traverse are positively interlocked, it being impossible to engage the traverse while under feed.

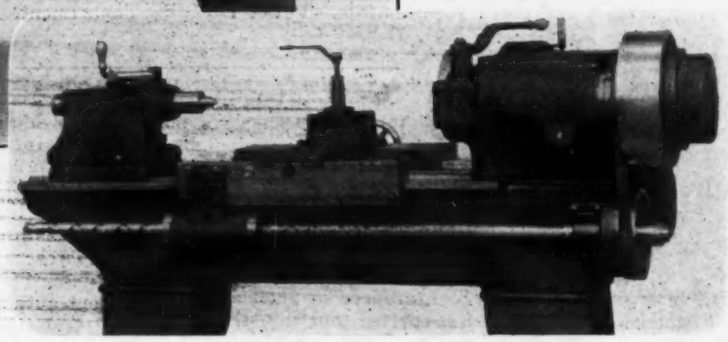
The feed is engaged and tripped, and the traverse in either direction is engaged by the same lever. Slight pressure on the operating lever engages the traverse, which remains in operation as long as the pressure is maintained. When pressure is released the carriage stops instantly at any position.

The mechanism is made up of a housing bolted and doweled to the back of the carriage, and a coarse pitch right and left-hand traverse screw. When moved in the vertical plane, the operating lever transmits its motion through a shaft and steel clutch finger to a positive sliding double clutch. The latter engages similar clutches on two nuts on the screw, one of the nuts engaging the left-hand thread and the other the right. The screw is driven at constant speed from the driving pulley through a system of differential reduction gearing.

The rate of traverse is uniform at 150 in. per min. A positive traverse stop is provided at the tailstock and this in conjunction with the automatic stop in the apron for the feed provides automatic stops in both directions. The spacing bar, combining positive adjustable length stops for both feed and traverse, is available if desired. Two traverse dogs and four feed dogs are furnished with the bar.



Simplicity and Convenience of Control Are Features of the Power Rapid Traverse. The mechanism, as shown at the left, is provided with the automatic spacing bar, combining multiple adjustable length stops for both feed and traverse



Rear View Showing Traverse Screw and Drive Arrangement (at Right)

Manufacturers Support Engineering Library

Contributions of money from a considerable number of manufacturers and other industrial companies have been made this year toward the support of the Engineering Library in the Engineering Societies Building, 29 West Thirty-ninth Street, New York. The chief support of the library has come from the four national societies of civil, mining, mechanical and electrical engineers. These societies have not been able to increase appropriations as rapidly as the demands on the library have increased, and the broadened use of the library brought embarrassment to the management in the effort to maintain it on an adequate scale.

As much of the increased use of the library is due to the enlarged interest of the industrial world in research, the situation of the library was brought to the attention of industrial companies making use of it. The library board at a recent meeting adopted a resolution thanking the industrial organizations which have contributed, but it is understood that many others have under consideration the question of making a contribution, looking upon it as a legitimate charge against the business in the direction of research and not as a donation, which on that score might be deemed an unwarranted use of stockholders' money.

The book lending feature of the library is expanding. Society members in any part of the country may borrow books easily replaceable or not too rare on the payment of 5 cents a day.

A section of the Second Annual Exposition of Domestic Appliances to be held in Paris, France, Oct. 21 to Nov. 9, will be given over to articles and products of United States manufacture and invention. Those interested should communicate with M. Albert Broisat, commissaire-generale American section, 2 West Forty-fifth Street, New York.

A conference of college professors is to be held at Schenectady, N. Y., from July 7 to Aug. 9, under the auspices of the General Electric Co. Each visiting professor will be given an opportunity to acquaint himself with subjects in which he is particularly interested.

TESTING MATERIALS MEETING

Special Attention to Heat Resistant and Other Alloys at Opening Sessions

ATLANTIC CITY, N. J., June 24—With one of the most comprehensive and ambitious symposiums ever organized, the twenty-seventh annual meeting of the American Society for Testing Materials began its series of sessions here today. This afternoon and this evening over a dozen papers with interesting discussions are being presented on corrosion resistant, heat resistant and electrical resistant alloys, including a tabulation of manufacturers' data on the composition and properties of the leading alloys. The showing is an impressive one and constitutes a record of the marked advance in this field in the last ten years.

The attendance is large and promises to exceed any former gathering. Already over 500 members and guests are registered with 337 men and 85 ladies enrolled yesterday, the day before the session started. Many leading iron and steel makers, metallurgists and scientists are on the job.

New Officers

The new officers for the coming year whose election will be announced tomorrow evening at the regular business meeting are:

President, F. M. Farmer, chief engineer Electrical Testing Laboratory, New York. Vice-president, J. H. Gibboney, Norfolk & Western Railroad.

New members of the executive committee: William Campbell, Columbia University, New York; A. E. Jury, director general laboratories United States Rubber Co., New York; Anson Marston, dean of the division of engineering, Iowa State College, Ames, Iowa, and Dr. John A. Mathews, Crucible Steel Co. of America.

Executive Committee's Report

The annual report of the executive committee, which will be presented tomorrow evening, reports a very large gain in membership since the last annual meeting. At the present time the roll of the society contains 3481 names, or a net increase of 241 since last year. This net increase contrasts with 210 for the year ending with the 1923 meeting and 122 for the year previous to that. The excellent showing in the past year is ascribed in large measure to the cooperation of the standing committees in using their organized efforts to secure new members. The membership is divided as follows: Honorary members, 3; members, 3387, and junior members, 91. Among the losses by death during the past year of 14 members the report mentions that of Robert W. Hunt, past president and honorary member of the society; Arthur Ladd Colby, one of the charter members of the society, and D. M. Buck, a member of the executive committee for the current term.

Unusual activity has characterized the work of the standing committees during the past year and their reports at this meeting are pointed to as one of the most inspiring records of achievement ever recorded by the committees in the annals of the society. Only four of the 41 standing committees are not presenting reports this year and 8 are offering more or less formal progress reports. Two new committees were organized during the year: Committee A-9 on ferroalloys and committee D-16 on slate. The former committee, organized last November, is reporting substantial progress this year.

Corrosion, Heat and Electrical Resistant Alloys

Last year a suggestion was made by one of the standing committees that a committee on corrosion-resistant, heat-resistant and electrical-resistance alloys be formed. After conferring with the several standard committees having an interest in this general subject, it was decided to defer the organization of such a committee and to arrange instead for a general discussion of the subject in the form of a symposium. The result has been the presentation this afternoon and evening of a program of about 14 papers by various authorities covering these important subjects.

The regular publications of the society during the year are announced as the proceedings containing 1689 pages, the year-book of 326 pages and the supplement to the book on standards, 126 pages, or a total of 2141 pages, compared with 1972 pages as the total for the previous year. The annual statement of finances shows that the surplus on Dec. 31, 1923, was $37,133.03. Sales of the society's publications have brought in $22,024.90, constituting approximately 30 per cent of the gross receipts of the year. The corresponding record for the previous year was $18,258.83.

The plan inaugurated a year ago of distributing, previous to the meeting, preprinted copies of committee reports and papers only to such members as requested certain copies, is characterized as having met with general approval and as having resulted in the past year in a saving in cost of preprints, compared with the previous year, of nearly $2,900.

In order to provide for increased facilities required by the continued growth and expansion of the society, the headquarters have been enlarged by the acquisition of the fourth floor of the Engineers' Club at Philadelphia, on a six years' lease, expiring Dec. 31, 1929.

The Society and Research

The question as to whether the society should, in a systematic and concerted way, go about the task of expanding the knowledge of engineering materials, their properties, their performance in service and the correlation of properties and performance which determines the suitability of various materials for specific services, or in other words, to enter more fully into the realm of research, has continued to receive the careful consideration of the executive committee. As a result of this, there has been authorized the formation of a small committee to be known as the committee on "Correlation of Research in the A S T M." The personnel of this important committee is at present under consideration and the announcement of its membership is expected at the present annual meeting. This committee, it is announced, will not be a research committee in the sense of actually conducting research; it will be charged to advise ways and means by which the whole question of research activity in the society's committees and in their channels may be advanced along the soundest lines to the end that the society shall contribute in increasing measure to the knowledge of materials of engineering. The committee will advise the executive committee in all matters relating to research and to which will be referred for consideration proposed studies of which several are attending. The committee believes and is confident that the members share this belief that this subject is one of the most important that the society is facing today and that the solution of the problems involved will vitally affect the future development of the organization.

Tomorrow, Wednesday morning, is to be devoted to a session on non-ferrous metals, corrosion and metallography, largely committees' reports, with the president's address and executive committee's report followed by an informal dance and smoker.

The regular steel session is scheduled for Thursday morning, with methods of testing and nomenclature to be discussed that evening.

Four papers and two committee reports, devoted to magnetic analysis and fatigue of metals, are to be presented on Friday morning with the regular session on wrought and cast iron following in the evening. A special discussion on cast iron pipe is a feature.

Steel Production in Canada

The production of steel ingots and castings in Canada during May followed the high output of pig iron by advancing 4 per cent over the output in April, and reached a total of 108,433 tons, the greatest tonnage reported for any month since October, 1920. The cumulative production for the five months ending with May last was 419,819 tons, of which 96 per cent was for further use of producing companies.

Prices of Iron and Steel and Other Products

Analysis of Basic Data Shows Metals Lower Than Most Other Commodities—Changes in Past Year Indicated

BY SIDNEY G. KOON

RAPIDLY falling prices of iron and steel products have made advisable bringing up to date the figures and diagrams covered under an article on the comparison of prices of different classes of materials published at page 108 of THE IRON AGE, Jan. 3, 1924. That article, which followed two others, in the first issues of 1922 and 1923 respectively, showed the changes which had taken place within a year. Similarly in the present case the changes are shown from one year ago.

With the exception of petroleum, cotton and flour, none of the items covered in the comparison is higher now than it was a year ago. Yellow pine, plate glass, shoes, pork and milk are at the same level as one year ago; all other items are lower. In one case, that of anthracite coal, the figures both this year and a year ago are higher than the peak price of 1920; all other items are lower than in 1920.

As has been the case in each study which we have published, comparison is made between THE IRON AGE composite prices of finished steel and of pig iron on the one hand and prices of fuels, building materials, textiles and clothing and goods on the other. Alongside these will be found the wholesale commodity groupings of the United States Bureau of Labor Statistics, while steel beams occupy a prominent place among the building materials.

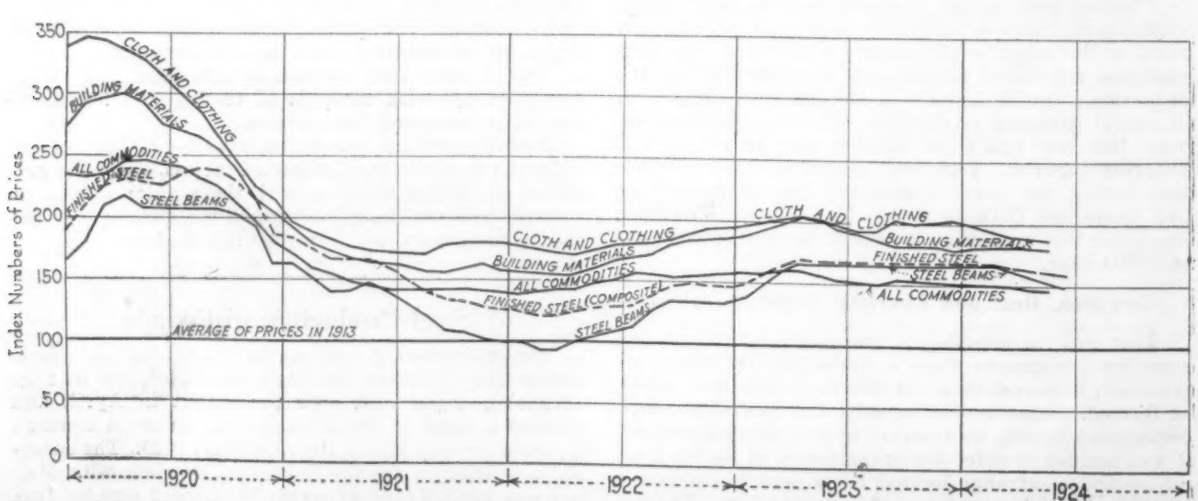
In each case the diagrams of individual commodities and groups are based on the 1913 price as 100. Each one shows the peak reached in 1920; each one shows the present price level and the price level of one year ago. The dotted portion of the diagram shows the excess of the present level over 1913. The portion shaded with diagonal lines shows the excess of last year's level over this year's. In two or three cases already mentioned the reverse is true, resulting in an area covered by both dots and diagonal shading. In the case of anthracite coal, a solid black area shows the excess of this year's figures over the 1920 peak, while the diagonally shaded area above that indicates the still higher level of last year.

It will be noted, in connection with the commodity prices of the Bureau of Labor Statistics, that metals are the lowest of all the groups, with the exception of chemicals and miscellaneous. They stand at 134 compared with 100 in 1913, while the weighted average of the 404 commodities analyzed by the bureau are at 147. Nearly all of the groups in the bureau's figures showed a decline from April. None showed an increase. The largest decline was in metals, which fell from 139 to 134. Farm products dropped three points; clothing, fuels, building materials and furniture two points, while chemicals and miscellaneous dropped one point each.

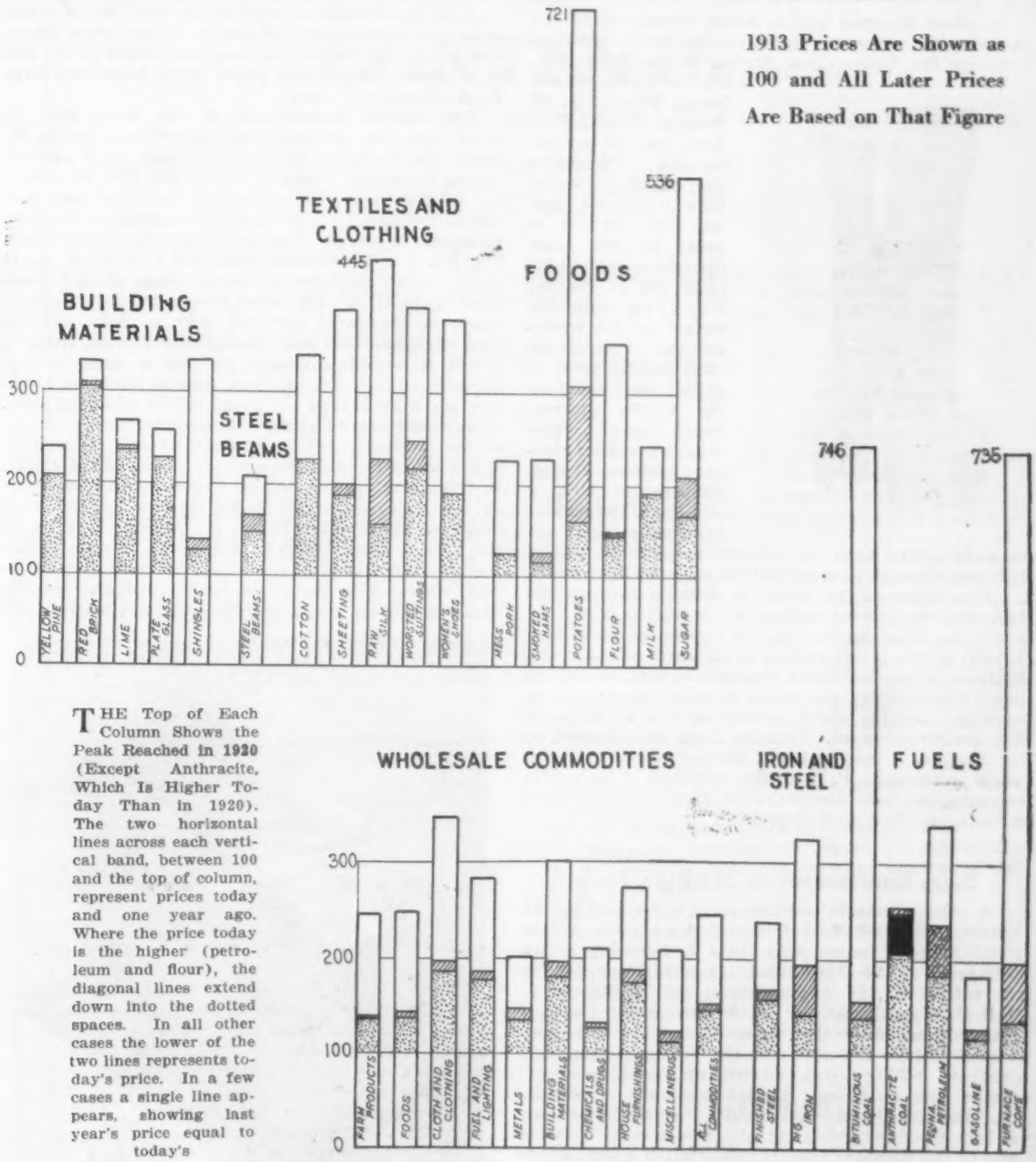
Steel beams, shown alongside the building materials, are at a lower level in proportion to 1913 than any of the other building materials shown, with the sole exception of shingles. They stand at 147 compared with 305 for brick, 235 for lime, 229 for plate glass and 207 for yellow pine. Similarly, they are lower than any of the items in the clothing group and are lower than three of the six items under foods. Present high building costs certainly are not due to the high cost of steel beams used in building construction.

In another diagram, tracing the course of certain commodities across the past four and a half years, we have placed THE IRON AGE composite price for finished steel and the price of steel beams in comparison with three of the figures reported by the Bureau of Labor Statistics, these being building materials, cloth and clothing and the "all commodities" price. Throughout the course of this diagram, both finished steel and steel beams have been consistently below both building materials and clothing. Except for the past year or so beams have been consistently below the all commodity price also, and they now are at the level of all commodities. The finished steel composite has been above the all commodity figure for more than a year, although it is below the specific instances otherwise given.

It will be evident from the data in the table and from the diagrams that, as a general proposition, prices of iron and steel are closely in line with the general level of commodity prices in the United States. Being manufactured products and having, therefore, a larger share in them of the high cost of labor than is the case with the raw materials, they naturally are above the prices of many of those raw materials, such as the farm products, fuels and some others. It is significant, however, that in spite of this disadvantage



Four and One-Half Years of Price Changes In Finished Steel and Steel Beams, Compared With Clothing, Building Materials and the "All Commodity" Index of the Bureau of Labor Statistics



THE Top of Each Column Shows the Peak Reached in 1920 (Except Anthracite, Which Is Higher Today Than in 1920). The two horizontal lines across each vertical band, between 100 and the top of column, represent prices today and one year ago. Where the price today is the higher (petroleum and flour), the diagonal lines extend down into the dotted spaces. In all other cases the lower of the two lines represents today's price. In a few cases a single line appears, showing last year's price equal to today's

with regard to price level, they are considerably below two of the five fuels indicated and not far from the level of bituminous coal.

Prices and ratios follow:

Item	Prices Quoted: Average 1913	Peak 1920	One Year Ago	Recent Figure	Index Number (1913=100): Peak 1920	Recent Figure
Farm products	....	....	138	....	247	136
Food, etc.	....	....	142	....	248	137
Cloth and clothing	....	....	198	....	346	187
Fuel and lighting	....	....	186	....	281	177
Metals and metal products	....	....	148	....	203	134
Building materials	....	....	194	....	300	180
Chemicals and drugs	....	....	131	....	213	127
House furnishings	....	....	187	....	275	173
Miscellaneous	....	....	123	....	208	112
All commodities	....	....	153	....	247	147
FINISHED STEEL	1.663c.	3.974c.	2.789c.	2.610c.	239	157
PIG IRON (composite)	$14.70	$47.84	$28.46	$20.54	325	140
STEEL BEAMS	1.50c.	3.10c.	2.50c.	2.20c.	207	147

Item	Prices Quoted: Average 1913	Peak 1920	One Year Ago	Recent Figure	Index Number (1913=100): Peak 1920	Recent Figure
Fuels:						
Bituminous coal	$1.34	$10.00	$2.10	$1.85	746	138
Anthracite coal	3.82	8.00	9.75	11.08	209	249
Furnace coke	2.41	17.75	4.75	3.25	735	135
Penna. petroleum	1.79	6.10	3.25	4.28	341	237
Gasoline	16.8c.	31c.	21.5c.	20c.	185	119
Building Materials:						
Yellow pine	$28.50	$67.50	$59.00	$59.00	237	207
Red brick	6.58	21.85	20.30	20.00	333	305
Lime	4.43	11.85	9.91	9.69	268	235
Shingles, red cedar	1.97	6.57	2.74	2.48	334	126
Plate glass	31.8c.	82c.	73c.	73c.	258	229
Textiles and Clothing:						
Raw cotton	12.84c.	43.75c.	29.2c.	29.25c.	341	228
Sheeting	7.3c.	28.5c.	14.6c.	13.9c.	390	190
Raw silk	$3.65	$16.25	$8.35	$5.65	445	155
Worsted suitings	1.38	5.42	3.42	3.02	392	218
Women's shoes	2.17	8.25	4.15	4.15	380	191
Foods:						
Mess pork	$20.93	$47.00	$26.00	$26.00	225	124
Smoked hams	16.60	37.70	20.50	19.00	227	114
Flour	4.61	16.25	6.60	6.75	352	146
Potatoes	61.4c.	4.43	1.89	0.93	721	159
Milk	3.5c.	8.5c.	6.7c.	6.7c.	243	191
Sugar	3.46c.	18.56c.	7.25c.	5.78c.	536	167

Wheel to Run on Rails or Highway

A wheel designed with a double tread, one to run on rails, the other on highways, has been manufactured by the Vulcan Iron Works, Wilkes-Barre, Pa., for the Griffin Double Tread Wheel Co., 27 William Street, New York. In the accompanying illustration the wheel is shown with a quarter section cut out. It is made in the usual diameters and weighs from 250 to 750 lb., varying with the weight of the traffic. Regular open-hearth steel will be used, or chilled steel made by the Griffin process, which uses a new type of cupola furnace operated at high temperature with a cold blast. The makers say that sections can be made as thin as in the ordinary motor wheel and of sufficient strength to withstand the strain of light traffic.

Adaptation of the wheel is possible through the fact that the bearing surface of the rail is 5 to 7 in. above the ties. Brakes may be applied so as to bear directly on the metal surface of the inner or rail tread. Surfaces of the rail tread and contact surfaces of the metal tread holding the rubber tires are machined true to centers and the wheels are balanced as to weight or distribution of metal. Transfer from rail to road, or the reverse, is made without change of course in the wheel mechanism. P. H. Grjffin, president of the Griffin company, has been associated for many years in wheel manufacture here and abroad.

Sales Conferences on Machine Tools

A sales managers' conference is to be held by the National Machine Tool Builders' Association at the Hotel Severin, Indianapolis, July 2, following a like conference at the Hotel Bond, Hartford, June 24. In the notices of the meetings sent out by Ernest F. DuBrul, general manager of the association, the program outlined shows that the questions likely to be considered include the ethics of the producer-distributor relations, selling helps, advertising, legal questions, credits and collections, special discounts to schools, etc. Incidentally, the preliminary program in the case of both meetings points out also how several bulletins sent to the members from the association headquarters may be utilized in providing the foundation for the discussions.

The Alabama Power Co. announces improvements being installed at its Bessemer and Leeds substations in Jefferson County, Ala., to cost more than $500,000, the purpose of which is to insure better service and to provide for the steadily growing lighting and power load of the Birmingham district. The improvements will consist principally of the installation of two large synchronous condensers. The condenser to be installed at Bessemer will be of 15,000 kva. capacity, while the one at Leeds will be of the capacity of 12,500 kva. At Bessemer plans are being laid for a second condenser.

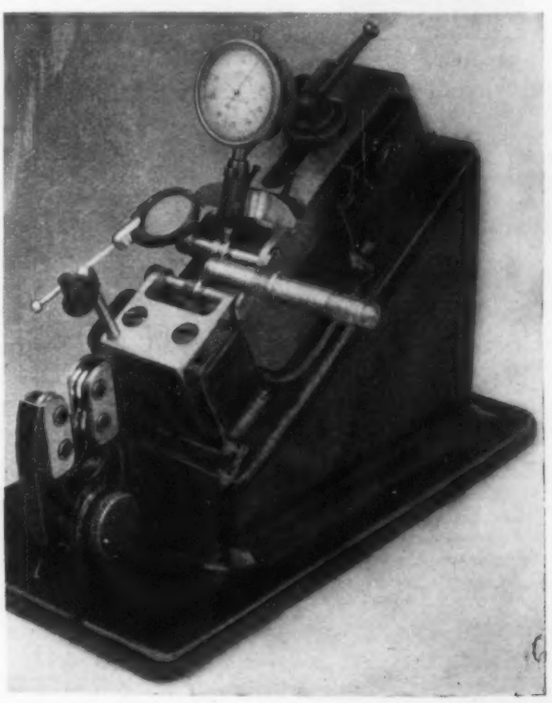
District railroads serving Youngstown and contiguous territory report moderate betterment in the loaded car movement for the first time in two months. Last week's average for the Ohio Region of the Erie Railroad, which is representative, was 5600 loaded cars per day. This compares with a per diem average in June to date of 5250 cars, compared with daily average of 5400 in May, and 6800 in the corresponding period in June, 1923. Ore and coal are moving more freely.

Screw Thread Lead Tester and Comparator

A device intended to combine the functions of a lead tester and comparator, and known as the screw thread lead tester and comparator, has been added to the line of adjustable thread snap gages of the John-Sons Gage Works, Hartford, Conn.

The general arrangement of the device may be noted from the accompanying illustration. As in the gages, the cradle for the screw is made up of annular gaging elements. These elements are free to rotate, and with the exception of the one "positive" roll have lateral freedom also, to adapt themselves to the lead variations in screws. Two standard sizes are available. The No. 1 is for threads from No. 0 A. S. M. E. to ½ in. outside diameter, and has a range of lead check from ⅛ to ¾ in. The other size is the intermediate, which is illustrated herewith with a ½-in. bearing stud engaged. This size accommodates work from ¼ to 1¾ in. outside diameter, and has a range in lead check from ¼ to 1¾ in. also. Special sizes are available for work beyond the range of the standard sizes.

A wedge-shaped plunger which runs in the groove on the "indicator roll" is elevated against the spindle of the indicator when the screw is placed in the cradle. In this manner screw thread lead errors are recorded on the indicator, which is set to zero by means of masters. The lower rolls are for testing the form of the thread. The column of the device is open at the rear to permit light to enter and the interior is enameled white. With the white background and the aid of a magnifying glass, variations in form between the accurate gaging roll and the screw thread are said to be easily noted.



Device Designed to Combine Functions of Lead Tester and Comparator. The use of annular rolls in cradle for the screw is claimed to make the device particularly effective and broad in range of adaptability

The use of annular rolls in its cradle is emphasized as making the device particularly effective and broad in its range of adaptability. Advantages claimed are, first, that it supports the screw in the angle entirely and has a line contact only, and, second, it functions without centers, which is advantageous because only a small percentage of screw machine products have centers. A third claim is that its principle of design permits accurate results without interference from the irregularities of the commercial screw thread. Quick operation and durability are general features emphasized. By attaching a snap gage to the lug on the base, which is provided for that purpose, it is said that the elements of screw threads may be quickly and accurately checked.

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Sheet Galvanizing Problems

WE have read that the sheet steel industry is planning a three-year publicity campaign, involving an expenditure of over $1,000,000, to increase the use of sheet steel and regain markets lost to other products. One of the chief objectives is to promote the use of galvanized sheets for roofing. It is now believed that the sheet steel industry has suffered in its sales of galvanized sheets owing to the inroads of other forms of roofing.

The galvanizing industry has not been without warning of what was going to happen. During the war, when spelter was scarce, it was discovered that there might be skimping of zinc coating and getting by with a less durable article. British manufacturers are known to have done this. For some time there has been complaint that the sheet galvanizing industry of the United States in general has not been putting enough zinc on its sheets. We say "in general," for there is variation in the practice of galvanizers. Some do better than the average and others worse. Zinc producers, as is natural, have urged the use of thicker coatings and many galvanizers have agreed that this is desirable. There are commercial considerations, and these have been and are still urged by manufacturers. They are asked to supply a sheet that will not peel under fabrication and one that will resist the tendency to fracture, where the coating is thick, seeing that zinc has but little elasticity. It is contended also that practice has been improved to the extent that there is a more uniform distribution of the coating than was formerly the case. But for uses other than those involving severe forming operations there is still the call for better galvanizing and manufacturers are doing well to heed it. Zinc is a highly durable metal under ordinary atmospheric conditions. The purpose of coating iron and steel with it is to protect them. If the coating be thick enough the protection is good; if not thick enough, the protection is not good. If too thin, the user might as well buy black sheets and paint them.

If the sheet galvanizing industry as a whole wants to increase the sale of its product for roofing and siding, and head off the competition of other substances, its plan of procedure will be that which some of its leading factors have advocated, namely: first, put enough spelter on the sheet; second, advertise to the consuming public what it is doing.

Better Materials for Construction

UNDER the above heading an *Engineering News-Record* editorial calls attention to the contrast between improvements in steels used for automotive purposes and in steels used for construction work, particularly in so far as the development of new forms of steel with higher structural qualities is concerned. In spite of the higher cost of labor and nearly everything else which goes into the present automobile, a far better product is turned out than that of ten years ago and at a lower price. In buildings, on the other hand, the cost level is approximately double that of ten years ago and the point is made that lack of advance in quality of materials is bound to mean lower efficiency and higher cost.

Improvement in structural steel is presaged by the proposed entry of the American Society for Testing Materials into the field of research in this line and by the activities of the American Institute of Steel Construction. Many criticisms have been directed at the building industry for its conservatism in both design and practice. Much of this has been due to the hampering standards set up by the building codes of various cities, divergent in their details and in many cases ill-conceived. Intended as a check upon the type of constructor who is always "taking a chance," these regulations in many cases have hung like a millstone around the neck of the progressive designer who builds on knowledge and seeks to make use of technical progress.

If a way out of this condition can be found we may look to see a reduction in building costs that will offset in a measure the high-handed demands of building labor—such a gain as usually comes from concentrated effort when long endured conditions have reached the breaking point.

THERE is nothing new in saying that the automobile and in turn improved highways are constantly affecting the commercial geography of our country. The fact that they are was brought

out in strong relief at the recent conference in Buffalo of makers and distributers of machine tools. The effort to establish ideal territories showed that both steam railroad and electric interurban lines often take a second position; more than that, the desirable distributing center for one region today may be summarily shifted tomorrow by the improvement of roads formerly not attractive to the automobile driver. Border line territories best served by long jumps on trunk line railroads become commercially as well as physically near a new center when automobile roads make them so.

Growth in Finished Steel Lines

THE statistics of production of the various forms of finished iron and steel in 1923 are worthy of study for several reasons. While the year was above normal in point of total activity, it represented the closest approach to the normal and natural in the character of business that we have had in ten years. There was no especially good or especially poor demand for any particular form of rolled material, yet there were great changes in the distribution of demand among the different mill products.

The general statistics of production of ingots and castings were discussed in this department of THE IRON AGE a fortnight ago, and the changed relationship between ingots and rolled steel in last week's issue.

The relationship between rolled iron and rolled steel has changed greatly. Making the comparison with the mean of 1912 and 1913, as representing the best pre-war showing, rolled iron decreased 42 per cent, to 955,597 tons in 1923, while rolled steel increased 40 per cent to 32,321,479 tons. The total rolled iron and steel increased 34 per cent to 33,277,076 tons. This comparison is the important one, for any loss in rolled iron is presumably merely a switch to rolled steel.

With a 34 per cent increase in the total of rolled iron and steel over the 1912-13 average, rails decreased 15 per cent, to 2,904,516 tons. Rail replacements increased somewhat, but laying of new track almost stopped. One-third of the decrease in production was due to decreased exports.

Structural shapes increased 13½ per cent, but sheared plates, ¼-inch and heavier, increased no less than 45 per cent, to 2,074,395 tons. The production of universal plates increased only 13 per cent, to 1,304,227 tons. The production of all plates, sheared and universal, all thicknesses, increased 39 per cent, to 4,168,745 tons. Thus they had approximately the same gain as all rolled material outside of rails.

Rods gained 20 per cent, to 3,075,892 tons. The growth of rod production has been quite interesting. Being for a very light final product, rods did not seem at one time to have any great tonnage future. Through the year 1901 the rod tonnage was generally less than one-half the rail tonnage, yet the prediction was made that rods would eventually pass rails. This they really did in 1914.

The general term "merchant bars" involves such a wide variety of material that the total is of little interest. It increased 42 per cent to 5,552,796 tons. There was a heavy loss of iron bars to steel bars.

Sheet and pipe statistics are not available for 1912, so that 1923 must be compared with 1913 alone. In sheets we find a most remarkable gain, 13 gage and lighter increasing 110 per cent to 3,078,145 tons in 1923, while tin mill black sheets, not for tinning, increased 60 per cent to 327,071 tons. The production of tin and terne plate increased by 69 per cent from the mean of 1912-13 to 1,506,861 tons. The production of all welded tubular goods increased 49 per cent to 3,351,023 tons.

With all the cross currents, the general observation is that the lighter lines, those of most widespread use, have tended to show the greater gains. The farm, the dwelling house and the automobile account for a great deal of steel nowadays.

STEEL from Belgian, French and Luxemburg mills is pouring into Great Britain in larger volume than ever. In the first four months of this year, British imports from Belgium averaged over 82,300 tons per month, largely semi-finished steel; in 1913 the average was only 48,600 tons per month. From France over 33,700 tons per month has been sent, comparing with only 3080 tons per month in the year before the war. This unusual movement is due in part to purchases made by British consumers when the exchanges fell to low levels early this year, but it is in line with a tendency that has been strong for some months. Throughout 1923 and recently, ingots and semi-finished steel from Belgian and Luxemburg mills have made up more than 60 per cent of the total that has gone through British ports to displace the domestic product.

MACHINE tools and other machinery contributed much to the exhibition held under the auspices of the Railway Supply Manufacturers Association at Atlantic City, June 11 to 18. The tools for the most part were under power and their performance in machining locomotive and car parts could be directly observed. The scope and character of the exhibits, the general participation of the machine tool makers, and the interest shown in the possibilities of the newest designs of production tools all give promise that early steps will be taken in the needed modernization of railroad shop equipment.

ACROSS the gulf between employer and employee a new bridge of promise has been thrown. Recently the president of the Western Electric Co., by means of microphone, sound amplification and widely scattered speech-projecting horns, spoke at a single noon-day assembly to the 35,000 men and women factory workers at the company's Hawthorne works near Chicago. The installation is a permanent one and its object is to restore so far as possible the old personal contacts and face-to-face relations between employer

and employed—conditions which were destroyed in the rise of mechanical invention, the industrial revolution that followed, and the vast expansion of plants under single control. Crossings and bridges have been made many times since the need of them was recognized, and various management methods and devices are serving well, though admittedly not all-sufficient. The experiment at Hawthorne no doubt will be repeated elsewhere and with careful handling ought to make for better feeling.

DISCUSSING alloy steels before the British Empire Exposition Sir Robert Hadfield said that while much ground has been gained in the last forty years, far more remains still to be discovered. Thus far twenty-three elements have been investigated as to their effects on iron. With these as a basis, he pointed out that the total number of possible ternary and quaternary alloys is 2024, for a complete investigation of which many years will be necessary. Sir Robert recalled the words of Cecil Rhodes: "So little done, so much to do." The field is indeed vast, but what is yet to be done is far from being as formidable as it would have been rated before the days of the electric furnace and heat treatment. Commercially, at least, the American industry has led and that fact creates large expectations of the contributions yet to be made by our technical men.

UNIVERSAL MILL AT SEATTLE

Pacific Coast Steel Company Extension—To Take Pig Iron from Utah

The Pacific Coast Steel Co. is adding a 22-in. universal mill to its plant at Youngstown, near Seattle, Wash., and expects to have it ready for operation in the next four months. The new mill will be contained in the present 22-in. merchant mill building and will roll universal plates from ¼ in. to ¾ in. thick and from 8 in. to 20 in. wide. The present products of the company are corrugated reinforcing bars, rounds and flats, angles up to 8 in., beams up to 6 in., merchant steel bars, light rails in 12-, 16- and 20-lb. sections and tie plates. The rolling of tie plates was begun about a month ago for 56- and 85-lb. rails, the entire output being sold to local railroads.

The output of the Seattle plant when running full is 400 to 500 tons of finished products per day, while the light rail mill can turn out about 40 tons per day. The company has quite a large foreign trade, especially in the Orient, the haul from Seattle to the Orient being about 800 miles less than from any other Pacific Coast port, this representing a considerable saving in time required for delivery.

The company has always operated its steel plant on three 8-hr. shifts, so that the adoption of the 8-hr. day by the steel mills in the East did not entail any change in its operations or costs.

In the basic open-hearth steel plant, as with other Pacific Coast producers, the charge is nearly all scrap. The average for May was 97 per cent scrap and the remainder pig iron. The company has been buying most of its pig iron from the Bethlehem Steel Corporation, shipments being made from the furnaces at Sparrows Point. The cost of the all water haul is about $8 per ton, this covering all charges for the iron laid on the docks at Seattle. It is taken by the Northern Pacific on a haul of a few miles to the mill. It is likely that in the near future the company will secure its pig iron from the new furnace of the Columbia Steel Corporation at Provo, Utah. The saving in freight will be a considerable item to the company and there will also be a great saving of time in delivery.

The Pacific Coast Steel Co. also has operated for some years a steel plant and finishing mills at South San Francisco, turning out for the most part the same products as the Seattle plant, except that transmission towers are an important factor at the California works and are not made at Seattle.

The company was the first to manufacture steel products on the Pacific Coast. The inception of the enterprise dates back to the late eighteen-nineties when what was known as the Western Iron & Steel Co. took over a small puddling plant located at Lakeview, near Tacoma, Wash., in which Richard Brown, formerly of Brown, Bonnell & Co., operating bar iron mills at Youngstown, Ohio, was financially, but not actively interested. It had lost money from the start. Upon solicitation of Mr. Brown, E. M. Wilson and W. S. Burt went from Youngstown to Lakeview and took hold of the plant. One factor in their success was that for some years they were able to buy the choicest railroad scrap as low as $5 per gross ton, delivered at the mill. In time Messrs. Wilson and Burt bought out the interest of Mr. Brown and the plant was removed about 1904 to a place then known as Humphrey, later as Youngstown, where the manufacture of iron bars was carried on for some years. However, iron products were fast disappearing and it was decided to change to steel and to manufacture a greater variety of products. At this time William Pigott, who was of the firm of Hofius & Pigott, handling iron and steel commission accounts in Seattle, became connected with the company and the name was changed to Pacific Coast Steel Co. In 1915 the first 40-ton basic open-hearth furnace was built, and in each of the three succeeding years another furnace was added. Finishing mills were built, these being 9-in., 12-in. and 16-in., and later a 22-in. mill, in addition to a 32-in. billet, bar and structural mill.

The officers of the Pacific Coast Steel Co. are Judge E. M. Wilson, president and treasurer, located at San Francisco; William Pigott, first vice-president; D. E. McLaughlin, second vice-president; W. S. Burt, secretary, and T. S. Clingan, general manager, all of Seattle.

The contract for the new universal mill, apart from a large shear, has been placed with the United Engineering & Foundry Co., Pittsburgh.

Large Hydraulic Riveter for Boiler Works

What is said to be the largest hydraulic riveter of its type, weighing close to 200,000 lb., will be built for the D. Connelly Boiler Co., Cleveland, by R. D. Wood & Co., Philadelphia, at their enlarged plant at Florence, N. J. The machine will be employed in the manufacture of high-pressure steam boilers.

The riveter will be of the split-stake type, having an outer stake of cast open-hearth steel. The inner stake will be made of a round steel forging and will be 40 in. in diameter at the root of the gap, which will measure 18½ ft. The riveter head will be of the six-power type to exert pressures of 200, 170, 130, 100, 70 and 40 tons, and the stroke of the die will be 12 in. The top of the forged steel stake will be equipped with a special horn of chrome-nickel steel, it being intended that boiler heads may be riveted to the shells through a manhole of standard size, even when driving the largest rivets.

The General Fireproofing Co., Youngstown, Ohio, has authorized a dividend of 30c. per share on common stock, payable July 1 to holders of record June 20. At the same time the regular quarterly dividend of $1.75 on preferred stock will be paid. The company is operating at 75 per cent.

PITTSBURGH BASE ARGUMENT

Attorneys for Complainants and Steel Corporation Appear Before Commission

WASHINGTON, June 24.—Final arguments in the Pittsburgh base case were concluded before the Federal Trade Commission here today. All of the commissioners, including J. W. Hunt, the new member, were present. Attorney K. E. Steinhauer, appearing for the commission, who opened the arguments, also closed them. He was joined by H. G. Pickering in urging the commission to issue a cease and desist order. Mr. Pickering appeared as counsel for the Associated States Opposed to the Pittsburgh Plus and the Western Association of Rolled Steel Consumers. Chief Counsel Richard V. Lindabury and Solicitor W. W. Corlett presented arguments for the United States Steel Corporation in opposition to a cease and desist order.

Extortion Is Charged

Contention was made by Mr. Steinhauer that the Pittsburgh plus system of quoting prices of steel is a method of extortion maintained by the Steel Corporation and that it dominates the entire industry which follows the same system. So-called fictitious freight rates were declared to take great sums of money from consumers. It was also declared the system prevents free competition.

Mr. Pickering said that the Pittsburgh plus practice results in discrimination in price paid by purchasers; that it lessens competition, because anything which affects costs also affects competition, and that the system is an unfair method of competition because price competition is eliminated. It was declared by Mr. Pickering that the natural price is at the mill and under the Pittsburgh plus system an abnormal market is set up at the point of delivery. The Pittsburgh plus system also was called monopolistic because it has the same effect as a combination.

Effect of Changing System

Mr. Corlett declared that "terraced" prices, which economists said are created by the Pittsburgh plus system, also would be created by the establishing of f.o.b. mill prices. He emphasized the fact that f.o.b. mill prices would vary precisely as Pittsburgh base prices do, and therefore would result in the same alleged discrimination as the present practice does. He pointed out that in times of competition a mill would quote an f.o.b. mill price to a nearby consumer but name a lower f.o.b. mill price to a consumer at a more distant point, if competition required it, and thus give as much cause for complaint by the nearby consumer of discrimination in favor of the more distant consumer as there can be cause for complaint that the Pittsburgh plus price creates discrimination. This, he said, is what so-called zone prices would mean. He said that the commission could not possibly prevent quoting of varying f.o.b. mill prices.

Arguing almost entirely from a legal standpoint, Chief Counsel Lindabury said that the commission must keep in mind that the only question for it to determine is that covered by the complaint. It charges violation of section 2 of the Clayton Act, which refers to substantial lessening of competition, and section 5 of the Federal Trade Commission Act, alleging unfair methods of competition. Neither section is violated by the Pittsburgh plus custom, Mr. Lindabury said. Charges of monopoly, agreement as to prices and related matters, he pointed out, are not at issue.

Based on Supply and Demand

The Pittsburgh plus plan was described as being based on supply and demand and departures have been and will continue to be made in it just as supply and demand are adjusted to each other, but to establish f.o.b. mill prices suddenly, it was declared, would result in bankruptcies and confusion. He further declared that steel manufacturers have by the right of free trade the privilege of quoting on any basis they chose, and that the commission or any other body has no authority to tell them how to quote prices. There can be no possible proof of price discrimination or unfair methods of competition, it was urged.

Iron Ore Shipments from Canadian Mines Last Year

The total shipments of iron ore from Canadian mines during the year 1923 amounted to 30,759 net tons, the net value of which was reported at $114,944, as against 17,971 tons shipped in 1922, with a value of $56,993, according to revised figures of the Dominion Bureau of Statistics. The output included 30,447 tons of beneficiated magnetite from Ontario, 5358 tons of which was exported; 243 tons of magnetite exported from British Columbia, and 69 tons of ilmenite, a titaniferous iron ore, exported from the Province of Quebec. Total exports amounted to 5670 tons, valued at $20,279.

Pig iron derived from Canadian ores smelted in Canadian blast furnaces during the year totaled 20,739 net tons, which at the year's average price for pig iron of $20.84 per net ton had a computed value of $432,298. No iron ores were mined in Nova Scotia during the year, but the British Empire Steel Corporation continued to operate iron mines at Wabana, Newfoundland. The shipments during 1923, which fell off considerably from the record of the previous year, amounted to 808,236 tons, valued at $1,826,129. Of this total 451,483 tons, valued at $1,017,071, was consigned to the company's works in Nova Scotia and the rest was shipped to Europe. The 1922 production of the Wabana mines was 1,123,327 tons, valued at $2,187,344, of which 311,482 tons, valued at $614,394, was shipped to Nova Scotia.

Production of Pig Iron in Canada Increased in May

The production of pig iron in Canada, which has been improving steadily since last February, again advanced during the month of May when 84,987 gross tons was reported, as compared with an output of 83,875 tons in April. The increase was in basic and malleable grades, while foundry iron showed a decline. Basic pig iron increased 6 per cent to 69,229 gross tons, and malleable iron advanced 96 per cent to 5,510 gross tons, while foundry pig iron, after falling off 44 per cent in April compared with March, again dropped 35 per cent to 10,248 gross tons in May. The cumulative production for the first five months of this year was 370,142 gross tons, the highest record for this period in the last three years, and equalled the output for the same period of 1920. The average monthly output was 74,000 gross tons for the five months ending with May of the current year, compared with 67,000 gross tons in 1923; 33,000 gross tons in 1922 and 51,000 gross tons in 1921.

The British Empire Steel Corporation, Sydney, N. S., set a new high monthly record for open-hearth steel when 34,279 tons of ingots was made during May. The highest previous record was in March last when 33,586 tons was reported. Other commodities produced by the corporation during May were: Coke, 32,000 tons; blooms, 29,705 tons; pig iron, 26,427 tons; rails, 16,768 tons; billets, 6402 tons; rods, 4300 tons; wire, 2732 tons.

According to newspaper reports W. R. Wilson, president of the Crow's Nest Pass Coal Co., is connected with a company which proposes to establish a steel industry at Fernie, B. C., to cost $5,000,000. Coal, iron and all other raw materials can be secured from this part of British Columbia.

FABRICATORS' ASSOCIATION

Progress of American Institute of Steel Construction—Annual Meeting in November

A report of notable progress has been made to the members of the American Institute of Steel Construction by the executive director, Charles F. Abbott, 350 Madison Avenue, New York. The building of a substantial and representative membership is regarded as successfully accomplished. Meetings have been held in at least a dozen important industrial centers, as pointed out recently in these pages, with architects, fabricators, engineers, contractors and building officials, as well as representatives of steel mills, participating. Now it is announced that the annual meeting will be held at French Lick, Ind., Nov. 13 to 16, inclusive.

The association's standard code of practice has been distributed for suggestions before final printing. Preparation of the association's standard hand book on structural steel construction is also in progress. In this connection Lee H. Miller, chief engineer of the institute, has been taking an active part in the meetings and on the technical committees. Since March 15, 18 company members have been added to the membership in the United States and eight Canadian fabricators.

The meeting in Chicago included fabricators located throughout the Middle West, and it proved of such interest that a second meeting has been requested, which will be held in July. The Birmingham meeting was attended by 150, and included most of the fabricators located in the South, as well as the architects, engineers and contractors in the Birmingham district.

In Kansas City, four meetings were held, attended by fabricators located in Missouri, Kansas and Oklahoma; and more than 200 architects, engineers, building commissioners, fabricators and representatives of the steel mills attended the banquet arranged by the Kansas City Structural Steel Co. In Milwaukee, 110 accepted invitations extended by Milwaukee members.

The Montreal meeting was attended by nearly all the fabricators in Canada, and before adjournment they passed a resolution applying for a group membership in the institute.

American Participation in World Power Conference

A party of American engineers, representing the American committee of the World Power Conference, which is to be held at London, England, June 30 to July 12, left New York June 19 on the Scythia of the Cunard Line. The conference is the first international meeting of the kind ever held. It is regarded of importance by American engineers because it will aid in answering many questions, such as the conservation of the world's fuel supplies and the economic and social importance of the rapid development and utilization of power resources. Thirty-one nations are sending delegates. The scope of the program is broad and covers technical, social, economic, financial, political and other phases of power development.

Engineers who will attend the conference include the following:

WILLIAM H. BAKER, president, Quigley Fuel Systems, Inc., 50 Church Street, New York.

H. H. BARNES, JR., assistant district manager, General Electric Co., 120 Broadway, New York.

H. BORNSTEIN, chief chemist, Deere & Co., Moline, Ill.

O. W. BOSTON, assistant professor, shop practice, University of Michigan, Ann Arbor, Mich.

WYLIE BROWN, American Copper Products Corporation, 233 Broadway, New York.

L. E. CONNELLY, vice-president, D. Connelly Boiler Co., Cleveland.

F. H. DANIELS, general manager, Sanford Riley Stoker Co., 25 Foster Street, Worcester, Mass.

W. A. DOBLE, chairman, board of directors, Doble Steam Motors, 714 Harrison Street, San Francisco.

ALFRED E. DOUGLASS, manager, pulverizing and crushing department, Fuller-Lehigh Co., Fullerton, Pa.

GANO DUNN, president, J. G. White Engineering Corporation, 43 Exchange Place, New York.

W. L. R. EMMET, consulting engineer, General Electric Co., Schenectady, N. Y.

ROBERT H. FERNALD, University of Pennsylvania, Philadelphia.

STANLEY G. FLAGG, JR., manager, S. G. Flagg & Co., 1421 Chestnut Street, Philadelphia.

ROGER FREEMAN, construction engineer, 8 West Fortieth Street, New York.

J. W. FULLER, president, Fuller-Lehigh Co., Fullerton, Pa.

A. J. GERMAN, chief engineer, Scovill Mfg. Co., Waterbury, Conn.

C. A. GREENIDGE, chief engineer, J. G. White Management Corporation, 43 Exchange Place, New York.

F. D. HERBERT, president, Kearfott Engineering Co., Inc., 95 Liberty Street, New York.

E. A. HITCHCOCK, dean, engineering college, Ohio State University, Columbus, Ohio.

FRANCIS HODGKINSON, chief engineer, Westinghouse Electric and Manufacturing Co., South Philadelphia, Pa.

JOHN HUNTER, consulting engineer, Heine Boiler Co., 5319 Marcus Avenue, St. Louis.

ALFRED S. IDDLES, chief power engineer, Day & Zimmerman, Inc., 1600 Walnut Street, Philadelphia.

D. S. JACOBUS, advisory engineer, Babcock & Wilcox Co., 85 Liberty Street, New York.

O. F. JUNGGREN, engineer, turbine department, General Electric Co., Schenectady, N. Y.

ALFRED J. JUPP, vice-president, Lunkenheimer Co., Cincinnati.

GEORGE T. LADD, president, George T. Ladd Co., 1606 First National Bank Building, Pittsburgh.

A. J. LINDEMANN, chief engineer, A. J. Lindemann & Hoverson Co., Lake Drive, Milwaukee.

CHARLES E. LUCKE, professor, mechanical engineering, Columbia University, New York.

E. P. MATHEWSON, consulting metallurgist, 42 Broadway, New York.

C. R. D. MEIER, president and treasurer, Heine Boiler Co., St. Louis.

IRA W. MCCONNELL, vice-president, Dwight P. Robinson & Co., Inc., 125 East Forty-sixth Street, New York.

A. E. NORTON, professor, Harvard University, Cambridge, Mass.

GEORGE A. ORROK, consulting engineer, 124 East Fifteenth Street, New York.

E. V. PANNELL, consulting engineer, British Aluminum Co., Ltd., 165 Broadway, New York.

P. A. PORTER, engineering department, Morgan Construction Co., Worcester, Mass.

E. W. RICE, JR., honorary chairman, General Electric Co., Schenectady, N. Y.

R. SANFORD RILEY, president, Sanford Riley Stoker Co., Worcester, Mass.

C. S. ROBINSON, vice-president, Youngstown Sheet & Tube Co., Youngstown, Ohio.

J. W. ROE, professor, industrial-engineering, New York University, New York.

DAVID RUSHMORE, consulting engineer, General Electric Co., Schenectady, N. Y.

J. V. SANTRY, president, International Combustion Engineering Corporation, New York.

W. L. SAUNDERS, chairman, Ingersoll-Rand Co., 11 Broadway, New York.

ALBERT SAUVEUR, professor of metallurgy, Harvard University, Cambridge, Mass.

HARLOW D. SAVAGE, vice-president, International Engineering Corporation, 43 Broad Street, New York.

C. E. SKINNER, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

AUGUSTUS SMITH, president, Bergen Point Iron Works, Bayonne, N. J.

ELMER A. SPERRY, president, Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.

H. N. SPICER, Dorr Co., Inc., 247 Park Avenue, New York.

GERARD SWOPE, president, General Electric Co., 120 Broadway, New York.

CALVERT TOWNLEY, assistant to president, Westinghouse Electric & Mfg. Co., 150 Broadway, New York.

WILLIAM M. WHITE, manager and chief engineer, hydroelectric department, Allis-Chalmers Mfg. Co., Milwaukee.

R. B. WILLIAMSON, Allis-Chalmers Mfg. Co., Milwaukee.

CHARLES R. WOOD, sales engineer, R. D. Wood & Co., Philadelphia.

European Conditions Improving Slowly

British Heavy Steel Business at Low Ebb—Continental Sales Are Better—Belgium Still Bothered by German Competition

(*By Cable*)

LONDON, ENGLAND, June 24.

PIG iron and steel conditions generally are still poor and traders expect little improvement before early autumn, as the summer holiday periods are approaching. Pig iron is weak, with poor demand, and cheap. Merchant sales of No. 3 G. M. B. have been made at second hand at £4 8s. ($19.01).

Hematite is equally dull, with prices weak. Foreign ore is quiet, Bilbao Rubio being held nominally at 23s. to 23s. 6d. ($4.97 to $5.08) c.i.f. Tees.

Finished iron and steel is dull. Heavy material orders are needed badly, but makers are not inclined to make substantial price reductions. Australia and South Africa are inquiring concerning railroad contracts.

Shipping outlook is improving. The Northumberland Shipbuilding Co., Ltd., Howdon-on-Tyne, has secured a 6500-ton vessel for British owners and an 8000-ton vessel, and is constructing two vessels, 6500 tons and 8000 tons, for Morel & Co., Cardiff, Wales. Palmers Shipbuilding & Iron Co., Ltd., Jarrow-on-Tyne, has been awarded contracts for two vessels for American owners.

Continental Conditions Better

Sales of continental material have improved, especially in semi-finished steel. Large quantities of wire rods have changed hands; sellers now are asking up to £8 10s. ($36.72) f.o.b. for August, onward. Billets are being sold at £6 ($25.92) f.o.b. A large line of sheet bar has been placed at £5 15s. to £6 5s. ($24.84 to $27).

In Belgium 47 furnaces were blowing on June 1. The output of Belgium still is expanding and is well above the pre-war level.

Sheets and Tin Plate

There is improved demand for tin plate and makers are less keen to sell at below 23s. ($4.97), basis I C, f.o.b. There has been large buying on option contracts by merchants, over the third quarter, and some up to the end of the year. Export demand is broadening.

Galvanized sheets are strong. Indian demand has been maintained on a fair scale. No. 24 gage corrugated sheets (galvanized) have been sold at £18 (3.47c. per lb.) f.o.b., for October, which is the earliest shipment offered by large makers.

Black sheets are firm. Far Eastern specifications are unchanged. Fair business is passing up to September shipment.

Disinclination to Pay Present Prices and Unwillingness to Cut When Labor and Fuel Are High Hamper Trade

LONDON, ENGLAND, June 12.—The markets for iron and steel have of course come under the influence of the holiday period just past, and business hardly can be said to have settled down again, especially seeing that a number of the works remained closed for the better part of this week. Generally speaking, however, the outlook is far from favorable, in spite of the fact that a marked revival has been noticeable in one or two specialties of steel. The demand for pig iron is only moderate, home consumers purchasing merely to cover their bare necessities, while exports purchasers are dissatisfied with the state of prices ruling and look for further concessions.

British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.32 per £1, as follows:

Durham coke, delivered	£1	7½s.	to £1	8s.	$5.94	to	$6.05
Bilbao Rubio ore†	1	4			5.18		
Cleveland No. 1 foundry	4	14			20.30		
Cleveland No. 3 foundry	4	9	to 4	10	19.22	to	19.44
Cleveland No. 4 foundry	4	8			19.01		
Cleveland No. 4 forge	4	7			18.79		
Cleveland basic	4	10			19.44		
East Coast mixed	4	16	to 4	16½	20.74	to	20.84
East Coast hematite	4	19	to 5	0	21.38	to	21.60
Ferromanganese	17	0			73.44		
Rails, 60 lb. and up	8	10	to 9	0	36.72	to	38.88
Billets	8	0	to 8	5	34.56	to	35.64
Sheet and tin plate bars, Welsh	8	12½			37.26		
Tin plates, base box	1	2⅝	to 1	3	4.89	to	4.97
					C. per Lb.		
Ship plates	9	5	to 9	15	1.78	to	1.88
Boiler plates	13	0	to 13	10	2.51	to	2.60
Tees	9	7½	to 9	17½	1.81	to	1.90
Channels	8	12½	to 9	2½	1.66	to	1.76
Beams	8	7½	to 8	17½	1.61	to	1.71
Round bars, ⅝ to 3 in.	9	15	to 10	5	1.88	to	1.98
Galvanized sheets, 24 g.	18	0	to 18	10	3.47	to	3.57
Black sheets, 24 gage	13	5			2.56		
Black sheets, Japanese specifications	15	5			2.94		
Steel hoops	10	15	& 12	10*	2.07	&	2.41*
Cold rolled steel strip, 20 gage	17	0			3.28		

*Export price. †Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

(*Nominal*)

Foundry pig iron:					
Belgium	£4	5s.		$18.36	
France	4	5		18.36	
Luxemburg	4	5		18.36	
Billets:					
Belgium	6	0		25.92	
France	6	0		25.92	
Merchant bars:				C. per Lb.	
Belgium	6	15		1.30	
Luxemburg	6	15		1.30	
France	6	15		1.30	
Joists (beams):					
Belgium	6	15		1.30	
Luxemburg	6	15		1.30	
France	6	15		1.30	
Angles:					
Belgium	8	0	to £8 5s.	1.54	to 1.59
⅛-in. plates:					
Belgium	8	0		1.54	
Germany	8	0		1.54	
¼-in. plates:					
Luxemburg	8	0		1.54	
Belgium	8	0		1.54	

On the other hand, though the makers have during the past few weeks made minor reductions, they cannot see their way to any substantial alteration on account of the high costs and also owing to the uncertainties of the future position of fuel. No. 3 Cleveland is now about 90s. ($19.35) and in some cases iron is being made for stock. Hematite demand is moderate, steel works not calling for any great quantities, while Continental buying has been checked by the depreciation in the franc, making foreign iron once more competitive.

Continental Competition Active

Semi-finished steel does not vary much and large lines change hands now and again, billets being about £8 ($34.40) delivered local consumers, but the Continent is able to offer supplies at about £1 less and consequently takes the cream of the orders. Finished steel has been very dull, all through, with the exception of galvanized and black sheets, in both of which commodities a large business has been passing. In the former case, a rise in prices brought in heavy buying orders from India and, whereas makers were anxious for June shipment orders, their books are now well filled for over August. Black sheets have been in steady request for the Far East, including Japan; a large volume of tonnage has changed hands and few supplies can now be obtained from works for shipment earlier than August or September.

The minimum price of tin plate has been reduced 10½d. (19c.) basis, following a reduction of 6s. 3d. on tin plate bars, making the schedule value now 22s. 7½d. ($4.86) basis I. C. f.o.b. It is stated that this reduction was made in view of keen competition in certain markets. So far, there has been no noticeable revival of demand but quite a steady small business has been put through, and most makers are willing to sell at the minimum, but there are one or two holding out for 23s. ($4.95) basis.

BELGIAN SITUATION BETTER

Specter of German Competition Persists—Many Quotations Lower

ANTWERP, BELGIUM, June 4.—In general the market is somewhat better looking, without much larger business. The firmness of exchange helped the situation but, on the other hand, prices in sterling had during the last week to be dropped on account of foreign competition, especially from Germany. Foreign buyers seem not yet to have sufficient confidence in actual quotations and, considering today's tendency of the German market, they expect still lower prices. Makers are getting short of orders and it will depend principally on the rate of foreign exchange whether they will have to accept further concessions.

Foundry Pig Iron

Better sales of foundry pig iron have been done. Prices in general run about fr. 410, delivered at consumers' works. This price equals today $18.20 f.o.b. Antwerp, this for high phosphorus foundry pig iron with 2.5 to 3 per cent silicon. Of course this quotation is not interesting for English buyers and still less attractive for American consumers. The same price is quoted on the Belgian market for Luxemburg and Lorraine iron, notwithstanding these makers find an outlet for part of their production at a higher price in France and Italy. Prices in France fluctuate between French fr. 360 and 380, i.e., Belgian fr. 414 and 437 on trucks at French furnaces.

Some Middlesbrough foundry pig iron has been imported but quantities are not large on account of the price. In fact, 96s. c.i.f. Antwerp represents today fr. 470. Per contra, good quantities of English hematite pig iron, especially East Coast pig iron, are imported. The actual price, about 105s. c.i.f. Antwerp, or fr. 515, is under the Belgian and French quotations.

Nominal prices quoted for inland business per metric ton and on trucks at maker's works are:

	Fr.		C. per Lb.
Foundry pig iron No. 3	410 or	$18.20	...
Thomas steel pigs	400 or	17.80	...
Commercial iron No. 2	600 or	26.60	...
Commercial iron No. 3	625 or	27.80	...
Commercial iron No. 4	650 or	28.95	...
Rails, first quality	675 or	30.00	...
Open-hearth steel, ordinary quality	650 or	28.95	...
Open-hearth steel, half hard	750 or	33.40	...
Open-hearth steel, mild	650 or	28.95	...
Open-hearth steel, special	900 or	40.00	...
Thomas ingots	450 or	20.00	...
Thomas blooms	525 or	23.35	...
Thomas billets	550 or	24.40	...
Thomas largets	575 or	25.60	...
Heavy joists (beams) and U iron, basis	600 or	26.50	1.20
Heavy sheets 5 mm. (No. 6½ gage) and more	750 or	33.40	1.52
Sheets 1¼ mm. (No. 16½ gage)	950 or	42.10	1.91
Polished sheets 1 mm. (No. 19½ gage)	1,500 or	66.60	3.02
Galvanized 1 mm. sheets	2,000 or	89.00	4.04
Bar iron, basis price	625 or	27.80	1.26
Galvanized wire	1,350 or	60.00	2.72
Barbed wire	1,450 or	64.50	2.93
Head wire nails, basis	1,250 or	55.60	2.52

Some unimportant business has been done in commercial iron No. 3. In this case it is reported that prices have gone as low as fr. 600, or $26.50, i.e., $1.20 under the nominal reported price. Makers, however, are anxious to book as, especially for this class of material, they get short of orders.

Prices for Steel

As regards sheet material, German prices prevail on the export market. Last German prices were certainly not above £7 10s. or £7 12s. 6d., while Belgian prices run at the lowest between £7 17s. 6d. and £8.

Belgium has been buying better quantities of bar iron. Orders were booked at prices such as fr. 625 ($27.80). No business resulted for export, notwithstanding the recent lower quoted prices of 130s. and 132s. 6d. f.o.b. Antwerp (i.e., fr. 610 or $27.10). Competitive prices on the London market were 127s. 6d., this quotation being mostly advanced by German agents.

English importers tried the purchase of semi-finished materials but their offers were not accepted. Belgian quotations kept billets at 115s. f.o.b. Antwerp, with 122s. 6d. for largets. Most makers abstain from quoting at these prices. If Luxemburg and Lorraine makers quote, in general, nearly the same prices as we do, Germans remain for the moment our strongest competitors.

Sheet Mill Wages

WASHINGTON, June 20.—Statistics of wages and hours of labor in sheet mills form part of an inquiry, by the Bureau of Labor Statistics, covering representative plants in ten departments of the iron and steel industry. The general reduction in hours of labor in the industry which was begun in the summer of 1923 had no effect on the sheet and tin plate mills, since the 8-hr. day had prevailed in this branch of the industry for many years. The hourly earnings show a 15 per cent increase in 1924 as compared with 1922, although they still are 26 per cent below the high average for 1920. As compared with 1913, the 1924 figures show a 70 per cent increase, and hourly earnings have more than doubled since 1910.

Machinery, patents and business of the Harvey Rim & Wheel Co., Buffalo, now in process of liquidation, have been purchased by the Ideal Steel Wheel Co., Inc., Ontario Street, Buffalo, a newly organized company of $250,000 capitalization. Directors of the new company are issuing $40,000 capital stock and have authorized $50,000 more to finance immediate operations. Equipment has been installed and wheels will be made under the Harvey patents, with some modifications. Operations will begin shortly. The company will be in the market soon for materials and will be ready to make manufacturing contracts. J. R. Benton is secretary.

PRESIDENT CAMPBELL'S VIEW

Tells Employees Politics Is Large in Present Business Depression

President James A. Campbell of the Youngstown Sheet & Tube Co., Youngstown, discusses the "Business Outlook" in the following statement to employees:

"Everyone employed by this company is anxious to know what is wrong with business and what the prospects are for improvement in operations, which are at the lowest point the steel industry has known for many years, but it is difficult to answer business questions with any certainty.

"Men in business, however, are quite unanimous in the opinion that the action by Congress with reference to the soldiers' bonus bill and the tax problem had much to do with alarming capital, which is very timid. As all of you know, we are on a pretty high plane as to values, both as to labor and commodities of all kinds. For this reason, transportation is necessarily high and this enters into the cost of everything which we buy, and even what we eat and wear and is quite a factor in the cost of construction of all kinds, whether house or factory.

Construction Costs High

"There is a general belief that construction costs are too high and will come down. For this reason, many people are hesitating to build now, believing that they can do so later for less money. This has a direct effect on our business. Distributors and users of materials of all kinds, and this is particularly true of steel products, are liquidating their stock of materials on hand as far as possible, being uncertain as to their requirements and also as to price reductions which may be effective when they actually need material. Prices are soft and in many cases are being reduced to secure business. This is always the case when the demand is less than the supply.

"No doubt the political situation also has something to do with present business conditions. Congress and the Administration have not agreed, as evidenced by the veto of the bonus bill and the dissatisfaction of the President with the tax bill, on which he has made known his ideas. For this reason capital is inclined to wait for investment until the political situation clears. The business interests have confidence in the President, because they believe his ideas are sound, and they are well satisfied with the ticket nominated in Cleveland; but there is still uncertainty as to whom the Democratic party will nominate, whether a radical or conservative, and with the possibility of the third party, business undoubtedly will wait to see what happens. The President is committed to the Mellon plan of tax reduction, and, if elected, will use his influence with Congress to modify the present tax law. There is no incentive for investment in industry at the present time, because such investment involves chances and promises no better returns than tax free securities.

Farmers Dissatisfied

"The farmers are dissatisfied because their products are on a lower level than the commodities which they are obliged to purchase. Many of them believe this can be cured by legislation and Congress has been proposing all kinds of bills for the relief of the farmer. We cannot have continuous prosperity until this condition is remedied and it cannot be done by legislation. The farmer should receive more for his products and pay less for the things he is obliged to purchase. Sooner or later the law of supply and demand will regulate this by a reduction in freight rates and a reduction in the price of fuel and in the cost of construction.

"Money is cheaper today than at almost any other time in the history of the country and this is the basis of good business. When the political situation clears and there is hope for economy in the cost of government, and lower taxes, capital will seek employment and business will improve. With the Presidential nominations behind us, it may give some encouragement to the investor, but it is possible this may not come until after election has actually taken place and it is definitely known what the policy of the next Administration will be.

"Business must be better in the near future than it has been in the past 30 days, because the country actually needs more material, even under the present conditions, than is being produced. Pig iron and some steel products are being sold at present at less than cost, but yet there is little demand.

"I would be glad to tell you, if I knew, what the prospects for employment are during the next four months. If I undertook to do so, I would only be guessing, which would give you no positive information. I have given you some of the causes which influence business, but the most important idea I want to impress upon you is the fact that we cannot have prosperous conditions and steady employment without the full cooperation of capital, and the men who have capital to invest must feel that it is safe and profitable to use their money in business before this will be possible."

MORE MILLS ACTIVE

Steel Production Also Increases at Youngstown—One More Idle Blast Furnace

YOUNGSTOWN, June 24.—Ingot production and rolling mill operations are enlarged this week in the Mahoning Valley, largely due to accumulation of orders during the recent period of reduced production. The active blast furnace list in the Youngstown district is reduced to 14, of 45, owing to suspension by the Youngstown Sheet & Tube Co. of No. 1 furnace in its Hubbard group.

Both the Sheet & Tube company and the Republic Iron & Steel Co. have increased operations of their steel-making departments. Of 52 independent open-hearth furnaces in the Mahoning Valley, 16 started this week, an increase of four as compared with the previous week. The Republic company has also started its Bessemer department, idle for several weeks.

In this district, the Carnegie Steel Co. is operating 14 of 30 open-hearth furnaces and its two Bessemer plants at 50 per cent.

More than double the number of sheet mills which operated last week in the Valley were scheduled Monday, 47 of 120 units being on the active list. On the other hand, tin mill operations decline. The Trumbull Steel Co. this week is operating eight tin mills and the Falcon Tin Plate Co. four at its Canton property. Strip mill operations also show a recession as compared with preceding weeks. The Sharon Steel Hoop Co. started two of its strip mills, with likelihood they would suspend before the week is over. The Trumbull company is operating two of three hot strip mills and its cold strip department at 60 per cent.

At its Girard works, the A. M. Byers Co., Pittsburgh, is operating its 88 puddle furnace plant at nearly normal and both rolling mills, which have been maintaining intermittent operations.

The Carnegie company is maintaining its properties in this territory between 45 and 50 per cent.

The Sheet & Tube company is operating five tube mills and the Republic company four, nine of 17 in the Valley.

But two of the nine blast furnaces in this district of the Sheet & Tube company are active, one each at the East Youngstown and Brier Hill works.

Six sheet mills at the Niles plant of the Republic company are active this week, as against none last week; it is also operating four light bar mills.

The Sheet & Tube company estimates its average production this week at 40 per cent; Republic company, 45 per cent; Sharon Steel Hoop Co., 25 per cent, and A. M. Byers Co., 75 per cent, at the Girard property.

Iron and Steel Markets

LOOKING FOR LOW POINT

July 1 Curtailment May Have Compensating Increase

Pig Iron Activity Continues at Lower Prices—Better Demand for Lighter Products

New buying of steel, rate of mill operations and shipments to consumers have changed in no significant way in the past week. Certain of the larger producers, including the Steel Corporation, have made some gains in all three respects, and the opinion reappears that the low point in production and in sentiment has been reached or is just ahead in the restricted operation now generally planned for the first week in July.

The Pittsburgh and Youngstown districts in particular promise a shrinkage in output next week, but in most cases with a compensating increase in the week following.

A slightly better demand is seen in some of the lighter lines, as sheets, strip steel and wire, but in the heavier products, particularly those entering into railroad consumption, there is a decided lag.

In view of the low production, with its increased costs, steel plant wages are again under discussion. If the outlook continues as at present for the maintenance of not far from the current range of prices for finished products, no change is looked for in the policy of leading independent interests, or of the Steel Corporation. At one large independent tin plate plant in the Pittsburgh district, reductions of 20 per cent for tonnage men and 12 to 15 per cent for other labor have been agreed upon, resulting in an operation at 65 per cent of capacity.

Buying of pig iron has continued actively at Chicago and it is estimated that the recent movement has amounted to 150,000 tons in that district, but prices have receded afresh to the extent of $1 at Chicago, $1 on Tennessee iron, 50c. to $1 at Cleveland and about 50c. at Pittsburgh. A feature of the buying at several Northern centers, especially in Michigan, has been that of automobile companies; but here the iron is very largely for the making of repair and replacement parts and the production of new automobiles still lags. The largest purchase was 27,000 tons of foundry pig iron by a sanitary company. At Buffalo, $19 seems to be maintained, with $20 the low price in eastern Pennsylvania.

This recent movement in pig iron represents largely the covering of known needs for the third quarter, and differs from that of last November, which preceded a marked expansion in steel. In the past three or four weeks about 600,000 tons has been bought, as against 1,000,000 tons in a fortnight in November. Today our pig iron composite is $1.25 below the low point of November.

Several more blast furnaces have stopped, though there were indications two weeks ago that curtailment had nearly spent itself. On July 1 only two merchant furnaces will be working in the Chicago district and 16 out of 34 steel works furnaces.

The further reduction in blast furnace operation in June has caused estimates of Lake Superior iron ore shipments in 1924 to be revised, a well approved figure now being 40,000,000 tons, as against 60,780,000 tons moved in 1923.

Structural steel work, after two good weeks in orders and inquiries, showed only fair bookings at 25,000 tons, with fresh inquiries of not over 12,000 tons.

Calling for considerably smaller tonnages than in the two preceding quarters, railroad inquiries are now appearing for miscellaneous up-keep for the third quarter—for axles and wheels as well as bars, plates and shapes. In new equipment about 250 cars were ordered in the past week.

Recent steel bar sales in the South indicate that the Birmingham differential over the Pittsburgh price is disappearing, under keen competition, just as happened to the Chicago-Pittsburgh relation under present conditions. Threatened importation of foreign steel at Gulf ports has been a factor.

The Pan-American Petroleum & Transport Co., a Doheny interest, has bought 60 miles of 8-in. and 10-in. line pipe, 7500 tons, for the California field. A pending inquiry is for 200 miles of pipe for Colombia, South America. In this case domestic producers have sharp competition from Europe.

Japanese demands show expansion, with sizable business in rails, boiler tubes and structural steel.

British steel makers, in a season of exceptionally poor business, have taken a number of good shipbuilding contracts.

For the first time since April, 1922, THE IRON AGE pig iron composite price is below $20, being $19.54, compared with $20.13 last week. One year ago it was $27.79 a ton.

Finished steel remains unchanged at 2.603c., according to THE IRON AGE composite price. One year ago it was 2.789c. per lb. The present price is the lowest since February, 1923.

Pittsburgh

Large Tonnage of Pig Iron Bought by Sanitary Company at Reduced Price—Wages Discussed

PITTSBURGH, June 24.—Continued buying of pig iron at "bargain" prices is the only noteworthy activity in this district, the chief item of interest being the purchase of 27,000 tons of foundry iron by the Standard Sanitary Mfg. Co. Of this amount 22,000 tons will be furnished by Valley furnaces at $19 base, furnace, and 5000 tons will be shipped to the company's Louisville plant from Ironton stacks. Basic, Bessemer and malleable grades have also been sold at prices lower than were quoted a week ago.

In the steel industry there is virtually no change. In some of the lighter lines of finished steel, notably

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	June 24, 1924	June 17, 1924	May 27, 1924	June 26, 1923
No. 2X, Philadelphia‡	$21.76	$21.76	$22.40	$30.76
No. 2, Valley Furnace†	19.50	19.50	20.50	26.50
No. 2, Southern, Cin'ti†	*23.05*	24.05	25.05	29.05
No. 2, Birmingham, Ala.†	*19.00*	20.00	21.00	25.00
No. 2 foundry, Chicago*	*20.00*	21.00	22.50	30.00
Basic, del'd, eastern Pa.	21.00	21.00	21.00	28.14
Basic, Valley furnace	*19.00*	19.50	20.00	27.00
Valley Bessemer del. P'gh.	*22.26*	22.76	23.76	29.27
Malleable, Chicago*	*20.00*	21.00	22.50	30.00
Malleable, Valley	*19.50*	20.00	20.50	26.50
Gray forge, Pittsburgh	*20.76*	21.26	21.76	27.77
L. S. charcoal, Chicago	*29.04*	29.15	29.15	36.65
Ferromanganese, furnace	107.50	107.50	107.50	125.00
Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	38.00	38.00	38.00	42.50
O.-h. billets, Pittsburgh	38.00	38.00	38.00	42.50
O.-h. sheet bars, P'gh.	40.00	40.00	40.00	42.50
Forging billets, base, P'gh.	43.00	43.00	43.00	47.50
O.-h. billets, Phila.	43.17	43.17	43.17	47.67
Wire rods, Pittsburgh	48.00	48.00	48.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	2.20	2.20	2.20	2.45
Light rails at mill	1.90	1.90	1.90	2.25
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.42	2.42	2.47	2.72
Iron bars, Chicago	2.20	2.20	2.25	2.50
Steel bars, Pittsburgh	2.20	2.20	2.20	2.40
Steel bars, Chicago	2.25	2.25	2.25	2.60
Steel bars, New York	2.54	2.54	2.59	2.74
Tank plates, Pittsburgh	2.15	2.15	2.20	2.50
Tank plates, Chicago	2.35	2.35	2.40	2.80
Tank plates, New York	2.34	2.34	2.34	2.84
Beams, Pittsburgh	2.20	2.20	2.20	2.50
Beams, Chicago	2.35	2.35	2.45	2.70
Beams, New York	2.44	2.44	2.44	2.84
Steel hoops, Pittsburgh	2.75	2.75	2.75	3.30

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	June 24, 1924	June 17, 1924	May 27, 1924	June 26, 1923
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.50	3.50	3.60	3.85
Sheets, galv., No. 28, P'gh.	4.75	4.75	4.80	5.00
Sheets, blue an'l'd, 9 & 10	2.75	2.75	2.80	3.00
Wire nails, Pittsburgh	2.90	2.90	2.90	3.00
Plain wire, Pittsburgh	2.65	2.65	2.65	2.75
Barbed wire, galv., P'gh.	3.70	3.70	3.70	3.80
Tin plate, 100-lb. box, P'gh.	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$15.50	$15.50	$16.50	$21.50
Carwheels, Philadelphia	17.00	17.00	17.00	22.00
Heavy steel scrap, P'gh.	**16.50**	16.00	15.50	20.50
Heavy steel scrap, Phila.	15.00	15.00	15.00	17.50
Heavy steel scrap, Ch'go.	**13.70**	13.50	13.75	17.50
No. 1 cast, Pittsburgh	**17.50**	17.00	17.50	23.50
No. 1 cast, Philadelphia	17.50	17.50	17.00	22.00
No. 1 cast, Ch'go (net ton)	16.50	16.50	17.00	21.50
No. 1 RR. wrot. Phila.	16.50	16.50	16.50	21.00
No. 1 RR. wrot. Ch'go (net)	11.50	11.50	11.75	15.00
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	*$3.00*	$3.25	$3.25	$4.75
Foundry coke, prompt	*4.00*	4.50	4.50	5.50
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	*12.62½*	12.75	13.00	15.12½
Electrolytic copper, refinery	*12.25*	12.37½	12.50	14.75
Zinc, St. Louis	*5.75*	5.85	5.72½	5.70
Zinc, New York	*6.10*	6.20	6.07½	6.05
Lead, St. Louis	*6.80*	6.95	6.65	6.70
Lead, New York	*7.00*	7.25	7.00	7.00
Tin (Straits), New York	*43.12½*	44.75	41.50	40.37½
Antimony (Asiatic), N. Y.	**8.50**	8.37½	8.50	6.75

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Composite Price, June 24, 1924, Finished Steel, 2.603c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 88 per cent of the United States output of finished steel

June 17, 1924,	2.603c.
May 27, 1924,	2.624c.
June 26, 1923,	2.789c.
10-year pre-war average,	1.689c.

Composite Price, June 24, 1924, Pig Iron, $19.54 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

June 17, 1924,	$20.13
May 27, 1924,	20.98
June 26, 1923,	27.79
10-year pre-war average,	15.72

sheets, strip steel and wire products, there is possibly a slightly better demand, entirely of a replenishment character, but in the heavier products steel companies are unable to report any marked change either for better or worse.

The fact that production has remained at about the same level for the past few weeks is pointed to by steel producers as an indication that the bottom has been reached, but it is to be noted in this connection that incoming specifications have not yet overtopped the relatively small amount of steel being made. Operations among plants of the Steel Corporation and the leading independent companies continue this week at about the average of a week ago.

The first week of July will doubtless be marked by a considerable shrinkage in output, as most plants will shut down for several days to a week or more over the Fourth of July holidays.

In view of the low production and correspondingly increased costs of steel making, the subject of steel plant wages is again being discussed. The attitude of the United States Steel Corporation as opposed to wage cuts has been made known by Judge Gary and officials of independent steel companies generally take the position that wages will not be lowered in their plants. The only exception so far is the action of the McKeesport Tin Plate Co., McKeesport, Pa., which persuaded its workers to accept reductions amounting to 20 per cent in the case of tonnage men and from 12 to 15 per cent on other labor. As the McKeesport company does not adhere to the Amalgamated scale, but makes independent wage agreements with its men, the cut was accepted by the latter upon the promise of continued employment. The plant is now operating at 65 per cent of capacity.

Pig Iron.—The Standard Sanitary Mfg. Co. has bought 22,000 tons of foundry iron for its plants in the Pittsburgh district and 5000 tons from Ironton furnaces

for its Louisville, Ky., plant. The iron bought for nearby plants will come from Valley furnaces and was purchased at $19 base, furnace. This is 50c. a ton below the purchases of the Westinghouse Electric & Mfg. Co. reported a week ago. Some other foundry iron has been bought, but mostly in lots of a few hundred up to a thousand tons, and in some instances $19.50, Valley, was obtained. One or two sellers say that they have not gone below $20, but of course they are passing up a good deal of the current business. Basic and Bessemer iron are weaker. A nearby steel company bought 3000 tons of basic, and while details were not divulged, it is known that a quotation of $18.50, Valley furnace, did not meet the price that was obtained, possibly from a furnace with a lower freight rate. The $18.50 quotation was from a broker, and probably is not really representative of what Valley producers might do. However, it appears to be beyond question that Valley basic is obtainable at $19, furnace, and our quotation is changed to that basis. Bessemer iron in small amounts has been sold at $20.50, Valley furnace, a decline of 50c. in a week. Malleable iron is obtainable at $19.50, Valley. Despite the fact that iron prices have gone at least $1 below what many in the trade were prepared to accept as the extent of the decline, there are yet no signs of strength. Furnace men are loathe to predict that prices will go any lower, as they are already below cost, but at the same time they are not ready to predict that an upturn may be expected soon. Large stocks of iron in furnace yards hang over the market and add to the depressing influence of low priced sales.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.75 per gross ton:

Basic	$19.00 to $19.50
Bessemer	20.50 to 21.00
Gray forge	19.00 to 19.50
No. 2 foundry	19.00 to 19.50
No. 3 foundry	19.00 to 19.50
Malleable	19.50 to 20.00
Low phosphorus, copper free	28.00 to 29.00

Ferroalloys.—Business is unimportant, being confined to occasional carload lots. Quotations on ferromanganese and other alloy remain unchanged and will be found on page 1896.

Semi-Finished Steel.—Despite the very small demand for wire rods, mills are maintaining the $48 price, and sales have been made within the past week at this figure. Many of the regular rod buyers are unable to convert rods into finished products and sell at a profit at today's prices, and the rod demand suffers thereby. For similar reasons business in billets continues at a low point, with prices unchanged at $38 for rerolling quality and $43 for forging quality. For detailed prices see page 1897.

Wire Products.—The most encouraging sign in the wire products trade is the fact that jobbers' stocks are running low and replenishment orders are more frequent. There has been a slight gain in business in the past week, not really important in itself, but enough to give rise to a more optimistic feeling among producers. Stocks of wire nails at the mills are still large, and should buying now show a steady increase due to better weather conditions for outdoor work, shipments can be made promptly from stock. Prices are apparently firmer than a few weeks ago, and mills are holding to $2.90 per keg, base, on nails and to $2.65 per 100 lb. on wire. Mill operations continue at about 40 per cent.

Steel Rails.—No improvement is noted in the demand for light rails. Prices remain at 1.90c. to 2c. per lb., mill. Buyers frequently give preference to rails rolled from rail steel, these being obtainable at $2 or $3 a ton under the price of rails rolled from billets.

We quote light rails, rolled from billets, 1.90c. to 2c. base (25-lb. to 45-lb.); rolled from rail steel, 1.75c. to 1.85c. base (12-lb. to 45-lb.), f.o.b. mill; standard rails, $43 per gross ton mill, for Bessemer and open-hearth sections.

Tubular Goods.—The Pan-American Petroleum & Transport Co., a Doheny oil interest, has placed an order for about 60 miles of 8- and 10-in. oil line pipe, about 7500 tons, for the California field. Other line pipe business is in prospect, among pending inquiries being one for about 200 miles of pipe for the oil fields of Colombia, South America. There is a possibility that this will be bought in the United States, although European competition will have to be met. Demand for oil well goods is not active, largely because the wet weather of the past two months has made it difficult to proceed with work. The large amount of oil in storage has also been a factor in keeping down the volume of new work. It is believed that the arrival of better weather for motoring will increase demand for oil and gasoline to such an extent as to improve business in the oil fields within a short time. Jobbers of merchant pipe are still engaged in liquidating stocks and specifications are coming slowly from that source. Although jobbers of oil well goods have maintained prices fairly well, jobbers of merchant pipe have engaged in a good deal of price competition and have brought pressure to bear upon the mill for concessions in mill prices. The mills, however, are said to have resisted such attempts and the discounts in effect for some months prevail practically without change. Discounts are given on page 1896.

Sheets.—Although the change in the volume of sheet business during the past week has been slight, it has been in the direction of improvement. Specifications have come to some of the mills more freely, and while the tonnage increase is unimportant, the attitude of buyers is not so disinterested as it has been in previous weeks. Prices have improved to the extent that some of the extremely low figures that were quoted have partly disappeared. Some mills have had little difficulty in getting 3.60c. and 3.65c. on black sheets and quotations of 3.50c. are said to be less frequent. Carload lots of blue annealed have been sold at 2.80c., although it is still possible to get quotations of 2.75c. On galvanized, one or two mills had gone below 4.70c., but it is now stated that 4.70c. is the lowest that can be done, while most mills are getting 4.75c. and 4.80c. The American Sheet & Tin Plate Co. operated its sheet departments last week at 43 per cent, and independent producers are averaging about the same production. Prices in detail are given on page 1896.

Tin Plate.—It is not expected that specifications for tin plate will improve until some progress has been made in harvesting early vegetable crops. The Wisconsin pea crop, for example, which ordinarily is harvested at this season, has been delayed by cold, wet weather to such an extent that it probably will be three weeks before it is harvested and put up in cans. Similar conditions prevail throughout a large section of the country and have resulted in a holding back of specifications for tin plate by can companies, which already have their storage facilities filled with cans manufactured in advance to take care of early crops. Mill operations continue at about the same rate as a week ago, but unless business improves soon, further curtailment is to be expected. The McKeesport Tin Plate Co., McKeesport, Pa., last week announced a reduction of wages, amounting to about 20 per cent for tonnage men and 12 to 15 per cent for other classes of labor. This company does not operate under the Amalgamated scale. It is considered unlikely that other tin plate makers which make independent wage agreements with their men will follow the lead of the McKeesport company, which is the first among the steel companies of the Pittsburgh district to make any drastic cuts in wages. Prices of tin plate remain at $5.50 for production plate and $5.25 for stock plate.

Cold Finished Steel Bars and Shafting.—A slight improvement in the demand for cold finished steel has been noted by some makers during the past week. Such increase is inconsequential in tonnage, but there is a greater number of orders, indicating, no doubt, that stocks of many consumers are running low. For drawn or rolled bars and shafting 2.90c. is uniformly quoted and there appears to be no deviation from this price, though some makers are taking orders for less than carloads at the same figure. However, some less than carload lots are being sold at 3c. to 3.15c. Shafting, turned and polished, is quoted at 3c. to 3.10c. and ground shafting at 3.30c. for carload lots.

Bolts, Nuts and Rivets.—Prices on bolts, nuts and rivets continue to be very irregular. Concessions of 10 per cent or more from published prices are frequently given on desirable lots. Plants in this district

are operating at a low rate, usually not above 40 or 45 per cent of capacity. For discounts see page 1896. Leading producers of rivets assert that recent reports to the effect that extras on rivets are being cut in half in an effort to stimulate buying are wholly erroneous, and that no such cuts have been made. While the market is weak and there is irregularity in prices, it is stated that the extras are being maintained.

Track Supplies.—There is very little inquiry from the railroads for track supplies. Prices remain unchanged, and are given on page 1896.

Iron and Steel Bars.—Though 2.20c. remains the quotation of all mills in this district on steel bars, some special customers have succeeded in buying at 2.15c. It is reported here that a considerable quantity of concrete reinforcing bars has come in at Galveston, Tex., from the Ruhr district. One lot of 2000 tons is said to have arrived and another shipment of 5000 tons is on the way. Bar iron prices are unchanged and the demand is small. Prices are given on page 1896.

Structural Steel.—Local fabricating shops continue fairly busy, some working at full capacity and having at least two months' work ahead. New work, however, is scarce and consists mostly of small jobs, on which there is keen competition. Plain material is quoted at 2.20c. by local mills and there is no authentic information of any lower prices. Prices are given on page 1896.

Plates.—Local mills continue to quote 2.15c. on plates, but are not getting much tonnage. Orders are mostly small. Prospects for an increase in construction work requiring plates are said to be somewhat better, but as yet these are rather indefinite. Prices will be found on page 1896.

Hot Rolled Flats.—Prices remain fairly firm considering the small volume of business being done. Hoops and bands are generally quoted at 2.75c. and strips at 2.50c. to 2.75c. Mills are operating at 40 to 45 per cent. Prices are given in detail on page 1896.

Cold Rolled Strips.—Some of the automobile companies released a little tonnage last week. Demand from other sources continues light. Stamping quality strip steel remains quite firm at 4.50c., mills showing little or no disposition to consider less.

Warehouse Prices.—Effective June 21 local warehouses have reduced prices on steel out of stock as follows: Soft steel bars, 3c.; plates, 3.10c.; shapes, 3.10c.; sheared plates, ¼-in., 3.35c.; hoops and bands, 3.75c.; cold-finished rounds, 3.90c.; squares, hexagons and flats, 4.40c.; wire nails, 3.30c.; cement coated nails, 2.90c.; black and galvanized wire, 3.20c.

Coal and Coke.—Furnace coke is now freely quoted at $3 per ton, Connellsville ovens. Some producers ask $3.15 to $3.25, but there is a sufficient quantity of $3 coke available to take care of the very limited demand. Coke production in the Connellsville district has been curtailed to such an extent that current output is almost down to the low point of the depression of 1921 and 1922. Beginning late in March, the curtailment has been continuous, each week recording a smaller output than the week before. More furnaces will go out this week. Coal demand is still of small proportions, and while more inquiry has appeared from some quarters, not much business is being done. Coal prices are slightly easier, and we now quote steam slack at $1.05 to $1.15, sales having been made at the lower figure; gas slack at $1.15 to $1.25; mine run steam coal, $1.50 to $1.75; mine run coking coal, $1.60 to $1.85, and mine run gas coal, $2 to $2.25.

Old Material.—A stronger undertone, with some advances in prices, has developed within the week, largely a result of the high prices offered and paid for the scrap sold last Friday by the Norfolk & Western Railroad. On some items the prices paid, when figured on a basis of delivery to mills in this district, were considerably higher than quotations as shown in the table below. For example, No. 2 railroad wrought, usually sold as heavy melting steel, brought prices equivalent to about $18, delivered Pittsburgh. Coil springs and couplers and knuckles were sold at prices equivalent to $19.75, Pittsburgh, while uncut scrap, which must be prepared in scrap yards before being sold to the mills, brought as high as $15.25, Pittsburgh, which means that the market for heavy melting steel must reach $19 or $20 before it will be profitable for the dealers who bought it to sell it to mills. A Weirton, W. Va., mill is now freely offering $16.50 for heavy melting steel, and it now appears doubtful that mills closer to Pittsburgh could buy at $16.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel	$16.50
No. 1 cast, cupola size	17.50 to 18.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	16.50 to 17.00
Compressed sheet steel	15.00 to 15.50
Bundled sheets, sides and ends	13.50 to 14.00
Railroad knuckles and couplers	19.50 to 20.00
Railroad coil and leaf springs	19.50 to 20.00
Low phosphorus blooms and billet ends	20.50 to 21.00
Low phosphorus plate and other material	20.00 to 20.50
Railroad malleable	16.00 to 16.50
Steel car axles	19.50 to 20.00
Cast iron wheels	16.50 to 17.00
Rolled steel wheels	19.50 to 20.00
Machine shop turnings	13.00 to 13.50
Sheet bar crops	16.50 to 17.00
Heavy steel axle turnings	15.00 to 15.50
Short shoveling turnings	13.00 to 13.50
Heavy breakable cast	15.50 to 16.00
Stove plate	13.50 to 14.00
Cast iron borings	14.00 to 14.50
No. 1 railroad wrought	14.00 to 14.50
No. 2 railroad wrought	16.50

TO BEGIN WORK AT TROY IN JULY

The Troy Coke & Iron Co. Will Furnish Gas to Three Cities by September, 1925

The Troy Coke & Iron Co., incorporated in March with capital stock of $3,000,000, by the Burden Iron Co. of Troy, the Foundation Co. of New York, E. Arthur Tutein, Inc., of Philadelphia and the Oliver & Snyder Steel Co. of Pittsburgh, will begin construction of the coke ovens and the reconstruction of the blast furnace at Troy next month. The by-product coke plant, to be built by the Foundation Oven Corporation, a subsidiary of the Foundation Co., New York, will consist of ovens of a new design, as described in THE IRON AGE, April 10.

It is announced that a 20-year contract has been signed by the Troy company with the Adirondack Light & Power Co. to supply gas from the coke plant to the cities of Albany, Troy and Schenectady, beginning Sept. 1, 1925. High pressure mains of 12-in. steel pipe will be laid from Troy to Albany and Schenectady. Laying the gas mains will be undertaken by the Adirondack Light & Power Co. and in the case of Albany by the Municipal Gas Co. Work on the pipe lines will begin soon.

Purchase by Severn P. Ker, president of the Sharon Steel Hoop Co., Sharon, Pa., of a residence at Youngstown, Ohio, has led to revival of reports that the company's principal executive offices are to be removed from Sharon to Youngstown. It is understood the company will occupy quarters in the new office and bank building to be erected this year by the First National Bank of Youngstown.

World production of coal in 1923, according to the figures received from the United States Geological Survey, amounted to 1,337,000,000 metric tons. Of this total, 43.5 per cent was produced by the United States. The world output was slightly greater than that for 1918 and only slightly under the production of 1917 and was 9.3 per cent over the output of the year 1922.

Due to slackness in railroad traffic and the first-class condition of motive equipment, two machine shops, at Cleveland and Meadville, Pa., on the Ohio Region of the Erie Railroad, were recently ordered closed.

Chicago

Heavy Pig Iron Buying with Lower Prices and Curtailed Production

CHICAGO, June 24.—The pig iron market remains active, although prices have again declined $1 a ton. Bookings in finished steel show scarcely any change for the better. Consumers are still content to use up what they have on hand pending further developments, although some of them who have practically exhausted their stocks are now giving serious consideration to buying. Some measure of recovery in business is expected, but it is probable that the recovery will be slow. While there is an increasing disposition to regard present prices as close to bottom, there is no incentive to buy for any extended period so long as prompt deliveries are available from the mills. With little demand from the heavy tonnage consumers such as the railroads, car builders and automotive manufacturers, there appears to be no early prospect of delays in mill shipments.

The price situation is still highly competitive, but less is heard of unusual concessions. Production has again declined as the result of the banking of another Gary blast furnace. Out of the 34 steel works stacks in this district, only 16 are still in blast. Mill operations average less than 50 per cent.

Ferroalloys.—A local buyer is inquiring for 300 tons of ferromanganese. This alloy is reported to have been quoted at $106.50, seaboard, but verification is lacking.

We quote 80 per cent ferromanganese, $115.06, delivered; 50 per cent ferrosilicon, $75, delivered; spiegeleisen, 18 to 22 per cent, $42.56, delivered.

Pig Iron.—Liberal buying, curtailment in production and further price reductions are concurrent developments in this market. The buying movement which started two weeks ago is now estimated to have yielded orders aggregating close to 150,000 tons. Business has been booked, however, at the expense of prices. On carlot orders $20.50, furnace, is the maximum going quotation, while attractive tonnages are moving at $20 base, furnace, and even that price is reported to have been shaded 50c. to $1 a ton in intermediate territories where the competition of other producing centers is more keenly felt. Among recent sales of importance are 3000 tons of foundry bought by a Michigan melter for last half, and 750 tons of foundry purchased by a local user for fourth quarter. A central Michigan melter closed for 500 tons of foundry with a Detroit producer who is reported to be quoting $19 base, furnace. The first buyers to place orders in the present movement were large melters and it is notable that new inquiries are smaller and come, as a rule, from smaller users. A carwheel plant, however, is inquiring for 500 to 1000 tons and a Wisconsin melter is in the market for 750 tons of foundry for last half. There are numerous other inquiries for 300 to 500 tons and some of them are coming from foundries serving the automotive industry. These melters are engaged largely in producing replacement and repair parts. As a general rule, malleable foundries specializing in production work for automobile makers are still running very slack. A railroad equipment manufacturer has entered the market for 300 to 500 tons of low phosphorus for a local plant, 3000 tons of basic for a Pittsburgh district plant, and 500 to 1000 tons of low phosphorus for an Eastern seaboard works. Silvery has been shaded 25c. to 50c. a ton on recent sales of small tonnages. A Michigan melter who was inquiring for 2000 tons of silvery now wants only 400 tons. Charcoal is weaker to the extent that all producers will meet the delivered price from the furnace having the lowest freight rate which is $3.04 to Chicago, but reports of a $1 concession in the furnace quotation still lack verification. Sales of separate lots of 300 tons and 100 tons of Southern foundry for third quarter delivery in Michigan brought out a price of $19.50, base Birmingham. The remaining Iroquois stack is being blown out this week and the Zenith furnace at Duluth will go out about July 1. This will leave only two active merchant stacks in the district, i. e., one furnace each at the Federal and Mayville plants.

Quotations on Northern foundry, high phosphorus, malleable and basic irons are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards or, when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	$29.04
Northern coke, No. 1 sil. 2.25 to 2.75	$20.50 to 21.00
Northern coke, foundry, No. 2, sil. 1.75 to 2.25	20.00 to 20.50
Malleable, not over 2.25 sil	20.00 to 20.50
Basic	20.00
High phosphorus	20.00 to 20.50
Southern No. 2	25.51 to 26.01
Southern No. 2 (barge and rail)	24.68
Low phos., sil. 1 to 2 per cent, copper free	30.50
Silvery, sil. 8 per cent	35.29
Electric ferrosilicon, 14 to 16 per cent	45.42

Structural Material.—Fabricating awards for the week, aggregating 3259 tons, are not up to the recent average, and few new prospects have developed. That the steel contract for the Lake Shore Athletic Club, Chicago, amounting to 7500 tons, may finally be let is indicated by the fact that the general contractor has started excavation work. Low as going bids on fabrication are, new figures will be asked on a Grand Trunk project at Battle Creek, Mich., 230 tons, and on a Chesapeake & Ohio station building, Ashland, Ky., 740 tons. Plain material prices are substantially unchanged.

The mill quotation on plain material is 2.35c., Chicago. Jobbers quote 3.20c. for plain material out of warehouse.

Plates.—Inquiries for 25,000 tons of oil tank work are pending, but no further lettings have been reported. Efforts are being made to curtail oil production, but if past experience is a good index, they will not succeed. The difficulty lies in the fact that operators cannot afford to shut down so long as anyone else continues to draw oil from the same field. Railroad equipment buying is light and new inquiries are few. Owing to slack demand, plate prices show no particular change.

The mill quotation is 2.35c., Chicago. Jobbers quote 3.20c. for plates out of stock.

Bars.—Actual demand for soft steel bars is hardly sufficient to test prices. Many buyers, however, have practically exhausted their stocks and are now in a frame of mind to consider replenishment. They see no particular advantage in buying for any great distance ahead, however, in view of the prompt deliveries available from the mills. Buying of bar iron also lags and one local mill has been shut down for two weeks for repairs. Demand for rail steel bars shows slight improvement and a Moline mill, which had been idle, resumed last week. Single turn operations are still the rule for hard steel bar mills.

Mill prices are: Mild steel bars, 2.25c., Chicago; common bar iron, 2.20c. to 2.25c., Chicago; rail steel, 2.10c., Chicago mill.

Jobbers quote 3.10c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.90c. for rounds and 4.40c. for flats, squares and hexagons, 4.25c. for hoops and 3.75c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.40c., base; hoops, 4.45c.; bands, 3.95c.

Sheets.—Orders are no more plentiful, but the attitude of buyers has changed to the extent that many of them are now willing to buy at a price, whereas a few weeks ago they displayed no interest in the market whatever. Most mills are adhering to the quotations named below, but reports of concessions of $1 a ton on galvanized and as much as $2 on black are more numerous.

Mill quotations are 3.65c. for No. 28 black, 2.80c. for No. 10 blue annealed, and 4.80c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote f.o.b. Chicago: 3.90c. for blue annealed; 4.70c. for black, and 5.60c. for galvanized.

Cast Iron Pipe.—This commodity remains the most active in the iron and steel market. Some pipe shops have booked as much as they shipped during the past month, although this is probably not true of the industry as a whole, in view of the fact that this season is normally one of comparatively slack demand. Grand Rapids, Mich., has awarded 1400 tons to the Lynchburg Foundry Co. Jackson, Mich., has placed 900 tons with James B. Clow & Sons. Kimberley, Wis., has let 575 tons to the National Cast Iron Pipe Co. The Detroit City Gas Co. is inquiring for 4100 tons of 24-in. gas pipe. Racine, Wis., contemplates the purchase of a considerable tonnage in large diameter water pipe. Prices are unchanged.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $58.70 to $59.70; 6-in. and over, $54.70 to $55.70; Class A and gas pipe, $5 extra.

Rails and Track Supplies.—A Pacific Coast line has placed a liberal order for spikes with a local mill. Otherwise the market is without new features. It is felt, however, that when the steel market stabilizes, considerable business which is now being held back will be quickly placed. There is no interest in light rails.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 2.10c., f.o.b. makers' mills.

Standard railroad spikes, 3.10c. mill; track bolts with square nuts, 4.10c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c. f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.65c. base, and track bolts, 4.65c. base.

Bolts and Nuts.—Most sellers have opened their books for third quarter on the basis of 60 and 20 off, Chicago, for large machine bolts, but are accepting spot business at lower prices. Demand shows no improvement.

Jobbers quote structural rivets, 3.65c.; boiler rivets, 3.85c.; machine bolts up to ⅞ x 4 in., 60 per cent off; larger sizes, 60 off; carriage bolts up to ⅞ x 6 in., 55 off; larger sizes, 55 off; hot pressed nuts, squares and hexagons, tapped, $5 off; blank nuts, $4 off; coach or lag screws, gimlet points, square heads, 65 per cent off.

Wire Products.—With demand showing a little improvement, rumors of price concessions are more frequent and some buyers feel that a general reduction will be made before fall business sets in. Mill operations, it is believed, have struck the low point, as no further curtailment is reported. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 1896.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, $3.40 to $3.75 per 100 lb.; extra for black annealed wire, 15c. per 100 lb.; common wire nails, $3.60 to $3.65 per 100 lb.; cement coated nails, $3 per keg.

Reinforcing Bars.—The market is notably less active from the standpoint of both orders and inquiries, but the two outstanding awards of the week involved large tonnages. The Sanitary District of Chicago placed 1800 tons for a North Side sewer, while 600 tons was bought for the elevated railroad extension to Niles Center, Ill. The bars for the new Palmer House, Chicago, 2000 tons, are expected to be let during the coming week. There is still a large amount of work pending, but it is slow in reaching the point of closing. Prices continue weak with the maximum going warehouse quotation 2.40c., Chicago.

Lettings include:

Sanitary District of Chicago, north side sewer, 1800 tons to Concrete Steel Co.

Elevated railroad extension to Niles Center, Ill., 600 tons to Kalman Steel Co.

Pending business includes:

Board of Education, Minneapolis, three grade school buildings, 130 tons.

Wisconsin State Fair Grounds, grand stands, West Allis, Wis., 100 tons.

Old Material.—Owing to their reduced operations, consumers are placing few orders, but hope for further buying of heavy melting has caused dealers to bid prices on that commodity and allied grades. This speculative movement has developed notwithstanding the fact that steel works operations show no sign of increasing and the open hearths of one independent mill have shut down entirely. A merchant blast furnace is again accepting shipments of borings and turnings with the result that those grades are slightly stronger. Axle turnings have advanced 50c. on a consumer purchase. Hydraulic sheets have declined owing to the practical disappearance of consumer demand in this territory. A fair tonnage of malleable has been bought by a local plant at the market. Railroad offerings include the Burlington, 4800; the Grand Trunk, 2400 tons; the St. Paul, 1500 tons; and the Chicago & Alton, 1500 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Iron rails	$16.50 to $17.00
Cast iron car wheels	15.50 to 16.00
Relaying rails, 56 and 60 lb.	26.00 to 27.00
Relaying rails, 65 lb. and heavier	27.00 to 32.00
Forged steel car wheels	16.50 to 17.00
Railroad tires, charging box size	17.00 to 17.50
Railroad leaf springs, cut apart	17.00 to 17.50
Rails for rolling	14.75 to 15.25
Steel rails, less than 3 ft.	16.00 to 16.50
Heavy melting steel	13.75 to 14.25
Frogs, switches and guards cut apart	13.75 to 14.25
Shoveling steel	13.50 to 14.00
Drop forge flashings	9.50 to 10.00
Hydraulic compressed sheets	9.50 to 10.00
Axle turnings	11.50 to 12.00
Steel angle bars	15.00 to 15.50
Steel knuckles and couplers	16.50 to 17.00
Coil springs	18.00 to 18.50
Low phos. punchings	15.00 to 15.50
Machine shop turnings	7.00 to 7.50
Cast borings	10.25 to 10.75
Short shoveling turnings	10.25 to 10.75
Railroad malleable	16.50 to 17.00
Agricultural malleable	16.00 to 16.50

Per Net Ton

Iron angle and splice bars	15.50 to 16.00
Iron arch bars and transoms	16.50 to 17.00
Iron car axles	23.00 to 23.50
Steel car axles	16.00 to 16.50
No. 1 busheling	9.00 to 9.50
No. 2 busheling	7.00 to 7.50
Pipes and flues	8.00 to 8.50
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	12.00 to 12.50
No. 1 machinery cast	16.50 to 17.00
No. 1 railroad cast	15.50 to 16.00
No. 1 agricultural cast	15.50 to 16.00
Locomotive tires, smooth	14.75 to 15.25
Stove plate	13.50 to 14.00
Grate bars	13.00 to 13.50
Brake shoes	13.00 to 13.50

Detroit Scrap Market

DETROIT, June 24.—One of the largest producers is offering approximately 5000 tons of miscellaneous scrap for July delivery on a competitive basis. No appreciable deviation from present prices is anticipated in the bidding. Some slight reductions in melt in the stove and furnace shops have occurred due to the warm weather, so that June will probably show the lowest melting figures for the past six months. Prices are the same as quoted a week ago.

Falcon Steel Co. Omits Dividend

YOUNGSTOWN, June 24.—Within the past year the Falcon Steel Co., operating an 8-mill sheet property at Niles, Ohio, has expended out of surplus over $200,000 in enlarging its finishing department, states President Lloyd Booth. The company has installed equipment for manufacturing highly finished sheet stock for the automobile and metal furniture interests.

Owing to this expenditure and slack business, directors deemed it advisable to maintain its cash position and accordingly omitted the second quarter dividend on common stock. The regular quarterly payment of $1.75 on preferred stock payable July 1 to holders of record June 20 was authorized.

Shenango Blast Furnace Will Bank

YOUNGSTOWN, June 24.—Due to temporary suspension of the plant of the Valley Mould & Iron Co., the Shenango Furnace Co. will be obliged to bank one of its active blast furnaces at an early date. This suspension will reduce the number of active stacks in the district to 13 of 45.

New York

Fair Activity in Pig Iron—Reports of Very Low Prices Not Justified

NEW YORK, June 24.—The past ten days has been only moderately active. One firm sold 8000 tons last week and 2500 tons the first two days of this week, and two or three other sellers had similar experiences. The transaction which aroused the most interest was the buying of 7000 tons by the H. B. Smith Co., Westfield, Mass., and it is evident that the reports of very low prices being made are not correct, as they arise from figuring back to Buffalo, whereas a large part, if not all, of the tonnage came from New York furnaces not in the Buffalo district and having a lower freight rate to Westfield than is enjoyed by the Buffalo furnaces. Indications are that on any ordinary tonnage $19 is now the lowest price obtainable in the Buffalo district and $20 in eastern Pennsylvania. A tonnage asked for by a New Haven buyer, 2000 tons No. 2X, is regarded as speculative. The A. P. Smith Mfg. Co., East Orange, N. J., is inquiring for 800 tons No. 2 and 700 tons No. 2X for fourth quarter delivery. Furnaces are not anxious to quote for fourth quarter at present prevailing prices. Some foundries report increase of demand for castings and they are urging deliveries of pig iron much more than they did a few weeks ago.

We quote delivered in the New York district as follows, having added to furnace price $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 1X fdy., sil. 2.75 to 3.25	$23.77 to $24.27
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.27 to 23.77
East. Pa. No. 2, sil. 1.75 to 2.25	22.77 to 23.27
Buffalo, sil. 1.75 to 2.25	23.91 to 24.41
No. 2X Virginia, sil. 2.25 to 2.75	31.44
No. 2 Virginia, sil. 1.75 to 2.25	30.44

Cast-Iron Pipe.—Prices show but little weakness, although buying is extremely light. Municipal tenders are still in the minority. Makers are fairly well booked through the summer on most sizes. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $60.60 to $61.60; 4-in. and 5-in., $65.60 to $66.60; 3-in., $75.60 to $76.60, with $5 additional for Class A and gas pipe. Only a light demand for soil pipe is reported and prices are weak. Makers have increased discounts by several points and are now quoting in a majority of cases, 40 per cent off on 6-in. and 50 per cent off on 6-in., heavy pipe with fittings 35 per cent off. The present period should be one of considerable activity and makers still hope for heavier buying before the end of the summer. We quote discounts of both Southern and Northern makers, f.o.b. New York, as follows: 6-in., 40 per cent off list; heavy, 50 per cent off list.

Finished Iron and Steel.—Structural steel work, including public service corporation enterprises, continues to be the active feature of an otherwise dull steel market. The railroads are entering the market for third quarter miscellaneous steel requirements, including axles and wheels, but these are uniformly less in quantity than for either the first or second quarters. Concrete road construction is well up to expectations and there is a fair amount of concrete building work under negotiation. Manufacturing consumers are substantially out of the market and at the moment definitely waiting political developments. The price situation is no factor, except that many buyers believe lower levels will be established before there is an advance. Companies doing a substantially nation-wide business are finding a leveling of price conditions among such centers as Birmingham, Chicago and Pittsburgh. Just as the differential between Chicago and Pittsburgh has been a disappearing quantity, so is the differential between Pittsburgh and Birmingham. Offers of foreign steel still appear but 2.25c., seaboard, is now asked where 2c. was a ruling quotation some weeks ago. Our quotations, given below, remain unchanged, with steel bars rather stiff at 2.20c., though 1000 tons sold by a Pittsburgh mill to a foundation company is believed to have gone at a price below 2.20c. Reinforcing concrete steel work, yet to be placed, includes about 1500 tons for Boston and about the same amount for New York, and a round tonnage will be required for the anchorages of the Philadelphia-Camden bridge. Recent sales include 540 tons for the Victor Talking Machine Co., Camden, N. J., and 1700 tons for the North Side intercepting sewer, Chicago, both placed with the Concrete Steel Co., and 600 tons for the Western Electric Co., at Kearny, N. J., awarded to the Kalman Steel Co.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.54c.; plates, 2.34c. to 2.44c.; structural shapes, 2.44c. to 2.59c.; bar iron, 2.44c.

Warehouse Business.—Buying of most products from stock seems to have settled into a condition of carefully thought out, hand-to-mouth purchases, which bring the jobber's business to about the same total each week. Effective June 20, prices on bars, shapes and plates were reduced by most warehouses in this district, $3 per ton. The present prices of 3.34c. per lb. for bars and 3.44c. per lb. for plates and shapes, figure back to a Pittsburgh base of 2.25c. per lb. from mill. Since the recent reduction of 10c. per 100 lb. on black and galvanized sheets, effective June 16, shading is reported to have practically disappeared. Sheet business is extremely light, however, particularly on black. Cold-rolled shafting and screw stock is weak, but sellers generally are still quoting on the 4.40c. base, despite a tendency in some quarters to shade this price. Brass and copper products continue weak, and effective June 18, were reduced ½c. per lb. for brass sheets, wire, rods and tubes and copper tubes, while sheet copper declined ¾c. per lb. We quote prices on page 1912.

Coke.—Weakness is still the outstanding feature of the market. But little buying is reported. Standard foundry ranges from $4 to $4.25 per ton with $3.75 offerings reported and standard furnace ranges from $3.50 to $3.75 per ton with $3.25 done occasionally. By-product is unchanged at $10.41, Newark and Jersey City, N. J.

Old Material.—The market is holding fairly well to its gains of last week, but there is no evidence of an upward tendency in any prices. Buying is still largely for the purpose of completing old orders and suspensions of shipments still occur. From June 21 to 27, a Harrisburg consumer suspended shipments of machine shop turnings, heavy melting steel and bundled skeleton. There is practically no movement of borings and turnings at present. No. 1 heavy melting steel is fairly firm with shipments going forward to Bethlehem, Pottstown, Claymont, Del., and Steelton. Dealers and brokers are offering from $14.50 to as high as $15.50 per ton delivered eastern Pennsylvania on strictly No. 1 heavy melting steel, while yard quality is going forward at $13.50 to $14 to an eastern Pennsylvania consumer. Stove plate shows a wide range of buying prices, shipments to consumers at Phoenixville and Harrisburg at $14 per ton, figuring back to buying prices New York of about $10.25 to $10.50 and shipments to a New Jersey consumer with a $2.02 freight rate, figuring back to about $11.75 per ton, New York. Specification pipe continues unchanged at $14.25 to $14.50 per ton, delivered to Milton and Lebanon, Pa. consumers.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$10.25 to $10.75
Heavy melting steel, railroad or equivalent	11.50 to 12.00
Rails for rolling	14.00 to 14.50
Relaying rails, nominal	24.00 to 25.00
Steel car axles	16.00 to 17.00
Iron car axles	23.00 to 24.00
No. 1 railroad wrought	14.50 to 15.00
Forge fire	8.50 to 9.00
No. 1 yard wrought, long	13.50 to 14.00
Cast borings (clean)	8.75 to 9.25
Machine-shop turnings	8.50 to 9.00
Mixed borings and turnings	7.75 to 8.25
Iron and steel pipe (1 in. diam., not under 2 ft. long)	10.25 to 10.75
Stove plate	10.75 to 11.75
Locomotive grate bars	11.50 to 12.50
Malleable cast (railroad)	14.00 to 14.50
Cast iron car wheels	13.50 to 14.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$15.00 to $15.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	13.00 to 13.50
No. 1 heavy cast, not cupola size	10.00 to 10.50
No. 2 cast (radiators, cast boilers, etc.)	12.00 to 12.50

Philadelphia

Fair Sales of Pig Iron—Fourth of July Suspension Longer Than Usual

PHILADELPHIA, June 24.—The iron and steel market in this district continues to drag, but sentiment in the trade has improved. Activity actually has increased in orders for plates, structural material, pig iron and scrap and the market for the latter two lines has grown firmer, with an increase of 50c. per ton in machine shop turnings. Except for pig iron, tonnages pending still are small, but accumulated lots in plates and structural material aggregate a fair volume of business.

The fact remains, however, that the steel market is weak, and especially so in plates and shapes. The quotation of 2c., base, Pittsburgh, now has become established on plates among large as well as small producers and this figure has been shaded, and is said to have gone to 1.90c., where attractive business was taken. One important producer of plates reports having taken more business the last three days of last week than during the entire previous period of the month. Fair sized sales of pig iron have stiffened the market without affecting prices. Buyers are said to be taking more interest, apparently in the belief that quotations have touched bottom, and some makers are now talking of higher figures. One furnace interest having good sized bookings has withdrawn from the market and expects to quote higher levels when entering the market again. Ordinarily the week preceding a holiday is characterized by dullness and, while that is true at present, it is apparent that the market has been given slight stimulus by the approaching Fourth of July. The attitude of buyers seems to be to cover on requirements to last over the period of shutdown of mills. Some mills will close on Saturday of the present week to remain closed throughout next week, but generally only a two to three-day close down is contemplated, except in instances where given units will be idle for a longer period. Some producers expect a slightly better demand after operations are resumed and look to more releases of accumulated requisitions, but it is doubted that this will be done to any great extent at this time. Operations in this district are estimated at 40 per cent of mill capacity or possibly a little less.

Pig Iron.—Increased orders have been taken the past week by furnaces in this district and the tone of the market is somewhat stronger, but no marked upturn is expected to develop in the near future, some producers anticipating better business and higher prices within 30 or 60 days. The bookings taken together with the firmer attitude of makers have been factors in bettering the tone of the market, but it is realized that demand is comparatively small, that there are stocks at furnaces to clean up and that steel works stacks still are merchandising iron. One interest has become fairly well booked, however, and withdrawn from the market, expecting to quote higher figures when again seeking business. The market also is naturally restricted by the situation applying to steel mills, which are hungry for orders. The H. B. Smith Co., Westfield, Mass., is said to have closed on its inquiry for 7000 tons of foundry iron at approximately $20, furnace, placing the business outside of this district. The Midvale Co. is said to have closed for about 1000 tons of iron, divided about equally between basic and Bessemer, some of the business being reported as going to a steel works interest. The basic price still is quoted at the equivalent of $21, furnace, with reports that the figure can be shaded on attractive lots. No sales for delivery beyond the third quarter have been made by furnaces in this district and they are unwilling to quote for shipment beyond that period. Imports of pig iron to Philadelphia the past week totaled 1501 tons, of which 1001 tons came from France and 500 tons from England.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$20.76 to $22.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	21.26 to 22.63
East. Pa. No. 1X	21.76 to 23.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	30.17 to 31.17
Virginia No. 2X, 2.25 to 2.75 sil.	30.67 to 31.67
Basic delivered eastern Pa.	21.00 to 21.50
Gray forge	22.00 to 22.50
Malleable	22.50 to 23.50
Standard low phos. (f.o.b. furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	24.00 to 25.00

Ore.—Imports of iron ore to this district last week amounted to 10,036 tons, 6000 tons coming from French Algeria, 2550 tons from British India, 900 tons from Egypt and 586 tons from Germany. Manganese ore imports were 4491 tons, coming from British Africa and chrome ore imports were 2000 tons, coming from Portuguese Africa.

Ferroalloys.—Extreme dullness still prevails in the market for ferroalloys and prices are unchanged with standard ferromanganese quoted at $107.50, furnace or seaboard, for both domestic and foreign shipments.

Warehouse Business.—Demand on warehouses the past week was quiet and while some business has been taken at the recently reduced prices, the lower levels apparently have not stimulated inquiry.

Soft steel bars and small shapes, 3.35c.; iron bars (except bands), 3.35c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel planished, 4.30c.; tank steel plates, ¼ in. and heavier, 3.35c.; tank steel plates, ⅜ in., 3.60c.; blue annealed steel sheets, No. 10 gage, 3.90c.; black sheets, No. 28 gage, 4.95c.; galvanized sheets, No. 28 gage, 6c.; square twisted and deformed steel bars, 3.35c.; structural shapes, 3.45c.; diamond pattern plates, ¼-in., 5.30c.; ⅜-in., 5.50c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; squares and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.10c.; narrower than 1 in., all gages, 4.60c.; steel bands, No. 12 gage to ⅛-in., inclusive, 4.10c.; rails, 3.35c.; tool steel, 8.50c.; Norway iron, 7c.

Sheets.—Moderate business is being taken in blue annealed sheets, with the prevailing quotation remaining at 2.80c., Pittsburgh, although it is reported scattered lots have been sold at a somewhat lower figure. Black sheets No. 28 are quoted at 3.65c., and galvanized sheets No. 28 at 4.80c., Pittsburgh.

Plates.—Although distinctly weak, the market for plates has shown slight improvement the past week. Orders were small but greater in number. One large maker whose business the last three days of the past week exceeded that for the previous term of the month, is running at capacity this week, but will be closed down all of next week when shutdowns will be general for part or all of the week owing to the Fourth of July holiday. The orders that have been placed have come from miscellaneous sources, such as makers of oil tanks, boilers, and locomotive works and individually consist of small lots in most instances. The price of 2c., Pittsburgh, on fair size orders, such as they are at present, has been established now by large as well as small producers and this figure has been shaded, a small amount of business having been reported at 1.90c. The level of 2.10c. has not entirely disappeared.

Structural Material.—Orders coming to fabricating shops have increased in number, but the tonnages involved are light and the market remains weak. The market for plain material still is quoted at 2.10c., but is reported to have been shaded in instances and some makers say that 2c. can be done on attractive lots. Imports of structural shapes to this district the past week involved only 59 tons, which came from Belgium.

Bars.—The market for both iron and steel bars is quiet and has been given no real test recently. Meanwhile makers still quote 2.20c., base, Pittsburgh, on steel and 2.10c., base, Pittsburgh, on iron bars, but there are indications that easier prices would be obtainable on fair sized orders.

Billets.—Business in rerolling and forging billets is

light, and quotations remain unchanged. The figure named on rerolling billets is $38 and on forging billets it is $43, base, Pittsburgh. Makers concede that large orders would result in shaded prices.

Bolts, Nuts and Rivets.—Makers of nuts, bolts and rivets are anxiously seeking business and the market is easy. Prices are being shaded. The quotations of large makers are 60 and 20 off list for machine bolts; 4.75c. and 4.50c. off list for hot and cold pressed nuts, respectively; $2.60 per keg for base size rivets in good sized quantities, $2.75 on ordinary sized lots and 70 and 10 off list for small rivets, all being on a Pittsburgh basis.

Old Material.—The market for scrap is firmer. Only one actual increase in price has been made, this affecting machine shop turnings, which have advanced to $13. The only grade that has eased off is bundled sheets, now quoted at $12.50. The firmer tone has not been due to any greatly increased demand, but is accounted for both by somewhat heavier sales and by the unwillingness of dealers to take business at prevailing levels. They report that they are compelled often in covering requirements for consumers to pay prices that are on a parity with those they receive and in covering on old orders have to take a substantial loss.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$15.00 to $15.50
Scrap rails	15.00 to 15.50
Steel rails for rolling	17.00 to 17.50
No. 1 low phos., heavy 0.04 and under	19.00 to 20.00
Couplers and knuckles	18.50 to 19.00
Cast-iron car wheels	17.00 to 17.50
Rolled steel wheels	18.50 to 19.00
No. 1 railroad wrought	16.50 to 17.00
No. 1 yard wrought	16.00 to 16.50
No. 1 forge fire	13.00 to 13.50
Bundled sheets (for steel works)	12.50
Mixed borings and turnings (for blast furnace use)	11.00 to 11.50
Machine shop turnings (for steel works use)	12.50
Machine shop turnings (for rolling mill use)	12.50 to 13.00
Heavy axle turnings (or equivalent)	14.00 to 14.50
Cast borings (for steel works and rolling mills)	13.00 to 13.50
Cast borings (for chemical plants)	14.00 to 14.50
No. 1 cast	17.50 to 18.00
Heavy breakable cast (for steel plants)	16.00
Railroad grate bars	14.00 to 14.50
Stove plate (for steel plant use)	14.00 to 14.50
Wrought iron and soft steel pipes and tubes (new specifications)	15.00
Shafting	22.00 to 22.50
Steel axles	20.00 to 21.00

Birmingham

Pig Iron Selling Lags and Furnace Operations Are Curtailed

BIRMINGHAM, ALA., June 24.—Southern furnace interests declare there are indications of an early improvement in the pig iron market but that new business is lagging. One blast furnace was banked this week, preparations are under way for further curtailment of the production and by the end of the month two more blast furnaces will have been shut down in the Birmingham district. Three have gone out since June 1. Sales recently have been in lots of from 100 to 200 tons and the aggregate has been under the production. Some inquiries have been received from which the inspiration is taken, indicating an early recovery in the market. Alabama iron is still moving in small quantities into the St. Louis territory, but the reduced prices in the Middle West and in other directions through the Ohio River gateway have interfered with competition of this district. Quotations are $20 to $20.50 per ton, No. 2 foundry. A sale or two of iron at $19.50 has been reported, but practically all furnace interests give the $20 to $20.50 price. Inquiries are coming from home melters as well as elsewhere.

Steel.—The steel market in the South is lagging also, but there is no general easing of quotations. Several of the steel users, fabricators, tank welders and others are reporting a little more business and there is a steady movement from a number of the plants. Considerable progress has been made in the general plan to use more of the steel of the district, as with pig iron. Wire and wire products are in warehouses here in quantity.

We quote per gross ton f.o.b. Birmingham district furnace as follows:

No. 1 foundry, 2.25 to 2.75 sil.	$20.50 to $21.00
No. 2 foundry, 1.75 to 2.25 sil.	20.00 to 20.50
Basic	21.50
Charcoal, warm blast	31.00

Cast Iron Pipe.—The cast iron pipe trade is receding. Lettings are showing a decided falling off. There are further indications that some specifications are being held back with the idea that a lower price is going to obtain before long, but manufacturers reiterate that they see no reason for this expectation.

We quote class B, 4-in. water, $52 to $53; 6-in. and over, $48 to $49; class A, $5 higher; standard soil pipe, $60; heavy gage, $45; standard fittings, $110.

Coke.—Production and movement of coke continues unchanged. Blowing out of blast furnaces this month has not brought about any reduction of the coke made at by-product coke ovens. Some coke is still leaving the district, the Southwest taking a little of the product. The home consumption is likely to be affected, as a number of shops and foundries find themselves with reduced orders. Quotations for coke are: Alabama by-product foundry, $5 to $5.50; bee-hive foundry, $5 to $5.50; furnace coke, $5.50 to $6.

Scrap.—Demand for No. 1 cast and stove plate recently gave much encouragement in the scrap market in Birmingham. Consumers are making their own price, practically, and in several instances dealers have seen fit to accept. This was noted in the sale of some stove plate. Heavy melting steel is lagging even around $11 per ton, a considerable drop from the prices obtaining a month ago. A little more old material is moving this week than last and the week before and some inquiries have been received. Even with pig iron prices off, old material is being used.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	11.00 to 12.00
Railroad wrought	11.50 to 12.00
Steel axles	17.00 to 18.00
Iron axles	19.00 to 20.00
Steel rails	13.00 to 14.00
No. 1 cast	16.50 to 18.00
Tram car wheels	15.50 to 16.00
Car wheels	15.00 to 15.50
Stove plate	14.00 to 15.00
Machine shop turnings	5.00 to 6.00
Cast iron borings	6.50 to 7.00
Rails for rolling	15.00 to 16.00

Buffalo

Fair Buying of Pig Iron at Low Prices—Some Inquiry from Pittsburgh

BUFFALO, June 24.—While there seemed to be some disposition a week ago to maintain a stiffer price front, the feeling this week is not so apparent and purchasers are able to do $19 on No. 2 plain, 1.75 to 2.25 silicon, readily and $19 to $19.50 on 2.25 to 2.75 silicon. One local producer announces that it is not anxious to book 2.25 to 2.75 silicon foundry or 2.75 to 3.25 silicon, and can take only a limited amount of 1.75 to 2.25 silicon for the third quarter. The inquiry for the week amounts to 10,000 to 15,000 tons and, including some tonnage sought from Pittsburgh, ran to 20,000 tons. One of the largest inquiries was for 2000 tons of foundry from the Pittsburgh district for third quarter delivery. Several lots of 1000 tons are sought, both foundry and malleable. One interest sold an aggregate of 9000 tons during the week, with a 1000-ton the largest. At least one other lot of 1000 tons was placed. Both of these were district inquiries.

We quote f.o.b., gross ton, Buffalo, as follows:

No. 1 foundry, sil. 2.75 to 3.25	$19.00 to $20.00
No. 2 foundry, sil. 2.25 to 2.75	19.00 to 19.50
No. 2 plain, sil. 1.75 to 2.25	19.00
Basic	19.00
Malleable	19.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—Business is quiet throughout the district this week, with no large tonnages being sought and only a fair run of medium and small-sized orders being entered. Fabricators report a slight improvement in the number of small-sized jobs taken. A transmission tower job reported last week at 450 tons is expected to run as high as 500 tons. Erie County will let 700 to 800 tons of steel for roadwork toward the end of the month. Three or four similar jobs throughout western New York will average about 100 apiece. While mills report indications of a stiffening market, not much more business has been placed. Buyers appear to be satisfied that the bottom of the market has been reached. Bars, shapes and plates are fairly firm, with bars and shapes at 2.20c. and plates somewhat less. With plate mills on irregular schedules, an improvement is noted in the warehouse demand for plates.

We quote warehouse prices, Buffalo, as follows: Structural shapes, 3.65c.; plates, 3.65c.; soft steel bars, 3.55c.; hoops, 4.65c.; bands, 4.35c.; blue annealed sheets, No. 10 gage, 4.30c.; galvanized steel sheets, No. 28 gage, 6.10c.; black sheets, No. 28 gage, 5c.; cold-rolled and round shafting, 4.45c.

Old Material.—The market continues in a stagnant condition, with only one mill showing any interest and in this case only for heavy melting steel and No. 1 busheling in small lots and at bargain prices. A little activity is showing at Pittsburgh with some demand for heavy melting steel, turnings, borings and hydraulic compressed sheets. Mills will pay $16.50 to $17 for heavy melting steel, Weirton; $13.75 to $14 for machine shop turnings, and $15.50 to $16 for hydraulic compressed sheets. A light Canadian demand for No. 1 cast scrap exists. The Canadian users will pay $17, Buffalo, for this material, dealers say.

We quote f.o.b., gross ton, Buffalo, as follows:

Heavy melting steel	$13.50 to $14.50
Low phos., 0.04 and under	17.00 to 18.00
No. 1 railroad wrought	12.50 to 13.00
Car wheels	17.50 to 18.00
Machine shop turnings	10.00 to 10.50
Cast iron borings	12.00 to 12.50
No. 1 busheling	12.00 to 13.00
Stove plate	15.00 to 16.00
Grate bars	14.50 to 15.00
Bundled sheets	8.00 to 9.00
Hydraulic compressed	13.50 to 14.00
Railroad malleable	18.00 to 18.50
No. 1 machinery cast	16.50 to 17.50

Boston

Peak in Pig Iron Buying Movement Was Reached the Past Week

BOSTON, June 24.—Unquestionably, buying of pig iron on this movement reached the peak the past week. Close to 20,000 tons was involved. The outstanding feature of the market was the purchase of 7500 tons No. 2 plain third quarter iron by the H. B. Smith Co., Westfield, Mass. Confirmation of details is lacking. It is believed, however, eastern Pennsylvania was purchased at around $22.50 delivered or less than $19 furnace. Buffalo iron was offered the firm at $22.91 delivered or $18 furnace. One textile machinery maker tomorrow will close on 5000 tons No. 2X and another 2000 tons No. 1X, both third quarter. A valve making concern, which recently closed on a round tonnage, has bought an additional 600 tons No. 1X iron for delivery over the four last months of 1924. In this instance confirmation of details also is lacking. A stove manufacturer took 500 tons Buffalo No. 2X at $23.91 delivered or $19 furnace, third quarter. Sales include a small amount of India No. 2X at around $24 delivered, duty paid. A Pittsfield, Mass., concern is in the market for 500 tons No. 2X fourth quarter iron.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

East. Penn., sil. 2.25 to 2.75	$24.65 to $25.65
East. Penn., sil. 1.75 to 2.25	24.15 to 25.15
Buffalo, sil. 2.25 to 2.75	23.66 to 24.41
Buffalo, sil. 1.75 to 2.25	23.66 to 24.41
Virginia, sil. 2.25 to 2.75	30.42 to 31.42
Virginia, sil. 1.75 to 2.25	29.92 to 30.92
Alabama, sil. 2.25 to 2.75	31.10
Alabama, sil. 1.75 to 2.25	30.60

Cast Iron Pipe.—New England municipalities are fairly well covered on summer pipe requirements, consequently a large percentage of current inquiries is for late fall delivery. Owing to their sold up condition, foundries are holding prices on small pipe, but concessions of $1.50 to $2 a ton are being made on large sizes. Chicopee, Mass., has split 900 tons of 24-in. pipe with R. D. Wood & Co. and the Donaldson Foundry Co. The Warren Foundry & Pipe Co. was the successful bidder on 600 tons of 8- in., 16-in. and 20-in. pipe for Holyoke, Mass., and 300 tons of 12-in. for Woonsocket, R. I.

Coke.—New England made by-product foundry coke is still quoted at $12 a ton delivered within this territory. Specifications against contracts so far this month have run considerably behind those for May, which was a smaller month than April. The progressive decrease in coke consumption is attributed to industrial conditions, New England foundry operations collectively having tapered off to around 35 per cent of capacity. Interest in Connellsville foundry coke is evaporating.

Old Material.—Early in the week there was a moderate turnover in certain classes of old material, notably heavy melting steel, machine shop turnings, chemical borings and mixed borings and turnings. Of late, however, business has dwindled to small proportions. Sentiment is optimistic, nevertheless, in as much as several large inquiries have appeared in the eastern Pennsylvania field and it is believed buying against these will take place in New England. One dealer has paid as high as $11.25 on cars for heavy melting steel. The general market is $10.50 to $11, although some firms maintain they still cannot do better than $10. Cotton ties at $8 on cars are more active. Bids close today on 60 cars of miscellaneous material offered by the Boston & Maine Railroad, and the General Electric Co., West Lynn, Mass., is about to award 35 cars of turnings, borings, mixed borings and turnings, punchings, steel, malleable, light iron and galvanized iron, bids for which closed late last week.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$19.00 to $21.50
No. 2 machinery cast	17.50 to 18.00
Stove plates	14.50 to 15.00
Railroad malleable	16.00 to 16.50

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$10.50 to $11.00
No. 1 railroad wrought	12.50 to 13.00
No. 1 yard wrought	11.50 to 12.00
Wrought pipe (1-in. in diam., over 2 ft. long)	9.50 to 10.00
Machine shop turnings	7.50 to 8.00
Cast iron borings, chemical	9.00 to 9.50
Cast iron borings, rolling mill	8.00 to 8.50
Blast furnace borings and turnings	7.00 to 7.50
Forged scrap and bundled skeleton	7.00 to 8.00
Shafting	15.00 to 15.50
Street car axles	15.00 to 15.50
Rails for rolling	12.00 to 12.25

St. Louis

Lower Prices on Pig Iron Quoted by Birmingham and Chicago Sellers

ST. LOUIS, June 24.—Buying of pig iron continues light. Melters in the St. Louis industrial district are seemingly uninterested in a future supply of pig iron, and there are only a few inquiries out as the third quarter nears. Even lower prices made by Chicago and Birmingham district makers failed to stimulate any interest in the market. Despite declines elsewhere, the St. Louis Coke & Iron Co. made no change in prices. In addition to its Granite City furnace, that company will continue to operate the Carondelet furnace under lease for the next 30 days at least. The principal sale of the week was made by a leading Chicago interest, 2000 to 3000 tons of basic to an East Side melter at a price said to be $19, Chicago. One hears of prices on Southern iron as low as $18, Birmingham, while one maker is said to be still holding out for $23. The Granite City maker sold approximately 1000 tons in lots of carloads up to 100 tons for prompt and third quarter shipments. A Louisville melter is in the mar-

ket for 1500 tons of foundry iron for third quarter, and there are St. Louis inquiries out for 200 tons and 150 tons respectively for third quarter. An Illinois melter wants 600 tons of malleable iron.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Florence and Sheffield (rail and water), $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$22.66 to $23.16
Northern malleable, sil. 1.75 to 2.25	22.66 to 23.16
Basic	22.66 to 23.16
Southern fdy., sil. 1.75 to 2.25 (rail)	23.67 to 24.67
Southern foundry, sil. 1.75 to 2.25 (rail and water)	21.78 to 22.78
Granite City iron, sil. 1.75 to 2.25	22.81 to 23.31

Finished Iron and Steel.—A few orders have been placed for structural shapes, but these have been against contracts. The demand for sheets is extremely dull. Railroad inquiries are few in number and are for material that should be purchased from warehouses. There had been some demand for material for building temporary oil tanks in the Oklahoma fields, but this is ended with the placing of orders for permanent storage, as reported in THE IRON AGE. The only new reinforcing bar contract pending is 300 tons for the North Baden (St. Louis) sewer project.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.10c.; No. 28 black sheets, cold-rolled, one pass, 5c.; cold rolled rounds, shafting and screw stock, 4.15c.; structural rivets, 3.90c.; boiler rivets, 4.10c.; tank rivets, $\frac{7}{8}$-in. and smaller, 60 per cent off list; machine bolts, 55 and 5 per cent; carriage bolts, 40-5 per cent; lag screws, 60 and 5 per cent; hot pressed nuts, squares or hexagons, blank or tapped, $3.50 off list.

Coke.—Dealers are beginning to show a little interest in their supplies of coke for the fall, and there has been a little buying. The demand for foundry grades continues light.

Old Material—Heavy axles and tire turnings, railroad springs, wrought iron bars and transoms are higher, but this is due to a short interest among dealers, who are paying more for the material than they are getting. An East Side consumer bought 1000 tons of No. 1 busheling. Otherwise there is little activity, and there is more optimism among dealers than consumers. New railroad lists follow: St. Louis & San Francisco, 1000 tons; St. Louis Southwestern, 2000 tons; Baltimore & Ohio, 13,000 tons; Chicago, Milwaukee & St. Paul, 1000 tons; Chicago, Burlington & Quincy, 6000 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$12.00 to $12.50
Rails for rolling	14.00 to 14.50
Steel rails less than 3 ft.	15.00 to 15.50
Relaying rails, 60 lb. and under	25.00 to 26.00
Relaying rails, 70 lb. and over	32.50 to 33.50
Cast iron car wheels	14.00 to 14.50
Heavy melting steel	12.50 to 13.00
Heavy shoveling steel	12.50 to 13.00
Frogs, switches and guards cut apart	13.50 to 14.00
Railroad springs	16.50 to 17.00
Heavy axles and tire turnings	11.00 to 11.50
No. 1 locomotive tires	14.50 to 15.00
Per Net Ton	
Steel angle bars	12.50 to 13.00
Steel car axles	15.00 to 15.50
Iron car axles	21.00 to 21.50
Wrought iron bars and transoms	16.00 to 16.50
No. 1 railroad wrought	10.25 to 10.75
No. 2 railroad wrought	11.25 to 11.75
Cast iron borings	8.50 to 9.00
No. 1 busheling	11.00 to 11.50
No. 1 railroad cast	16.00 to 16.50
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	12.00 to 12.50
Machine shop turnings	5.50 to 6.00
Champion bundled sheets	7.50 to 8.00

In spite of low iron and steel plant operations, employment has been fairly well sustained in the Mahoning Valley, due to policy of the mills in rotating employees. Thus workers are not wholly unemployed and their earnings altogether cut off. Surplus of common labor has found employment in railroad maintenance, construction and road building. The rate for common labor ranges from 45 to 60c. per hr.

Cincinnati

Brokers Reported to Be Quoting Low Prices on Tennessee Pig Iron

CINCINNATI, June 24.—Fair sized buying again characterized the pig iron market last week. An Indiana melter closed for 1500 tons of foundry, 500 from Chicago and 1000 from Ironton, the price being $20, furnace, in each case. A nearby melter placed 2000 tons with a Lake furnace at $19, furnace, and an additional 500 tons for an Indiana connection with the same furnace at the same figure. A Michigan melter closed for 2000 tons at $19.50, Lake furnace. A central Ohio melter bought 1500 tons from an Ironton district furnace at $20, base. A number of other sales running from 100 to 500 tons were made. Prices show both weakness and strength. A Lake interest which had been quoting $19, furnace, has advanced to $20, while iron from Chicago district has been quoted at $20, a decline of $1. In the Ironton district, $20 appears to be the minimum, but it is agreed silicon differentials have been waived on some sales. Tennessee iron is reported to have been quoted by brokers at $18, but the lowest furnace price reported is $19, with Birmingham furnaces quoting from $20 to $21. Silvery prices have firmed up and it is hardly possible to place other than large tonnages at less than schedule. There is no demand for basic in this market, though it is available at $19.50, furnace. Inquiries are more numerous, the largest being from a Kentucky melter for 2000 tons of Northern. The Louisville & Nashville Railroad is inquiring for 550 tons of Southern iron. Globe silvery furnace, after a lengthy run, went out last week for relining.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$23.05 to $24.05
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	23.55 to 24.55
Ohio silvery, 8 per cent	32.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	22.27 to 23.27
Basic Northern	21.77
Malleable	22.27 to 23.27

Finished Materials.—A report is current that a large fabricator in the district had placed an order for several hundred tons of plates at 2.10c., Pittsburgh. While 2.15c. is the generally recognized quotation on going business, it is not denied that this price could be shaded on large tonnages. A quotation of 2.15c. failed to take an order for 300 tons from a manufacturer in this district, the supposition being that a northern Ohio mill had taken the business at 2.10c., mill. Plates and shapes were most in demand last week, though no really large orders were booked. Shape orders generally bring 2.20c., Pittsburgh. Bars are in light demand, though the price of 2.20c. is fairly steady. There was little activity in wire products, and while nails are quoted at $2.90 per keg, mill equalizing of freight rates makes it appear as though this price was being bettered. Track supplies are very quiet, and so are bolts and nuts, with prices weak.

Sheets.—Demand runs to carload lots, and reports are again current of 4.50c. having been done on galvanized. This appears to be much exaggerated, although it is still possible for large buyers to get concessions of $1 per ton from the generally accepted market of 2.80c. for blue annealed, 3.65c. for black and 4.80c. for galvanized. We note a sale of 500 tons to an automobile manufacturer in this district at the above schedule for third quarter shipment. We also note a sale of 350 tons of tin plate at the regular price of $5.50 per base box.

Structural Activity.—The week was a quiet one, the Big Four Railroad opening bids on 600 tons of bridge work. New inquiries include several hundred tons of bridge work for the Peoria & Eastern Railway, and 200 tons for the Central of Georgia Railroad. Low prices are still being quoted.

Reinforcing Bars.—There has been little new inquiry, and awards were light. The Ferro-Concrete Construction Co. has an inquiry out for 400 tons for va-

rious jobs. Prices are unchanged at 2c. to 2.25c. for rail steel and new billet stock respectively.

Warehouse Business.—Following the reduction of $2 per ton made by Chicago and Indianapolis warehouses, local jobbers have reduced prices on the heavier products $2 per ton, and on hoops and bands, $4 per ton. No change has been made in wire products. Demand is fairly well maintained, small tonnages constituting market activity.

Cincinnati jobbers quote: Iron and steel bars, 3.40c.; reinforcing bars, 3.50c.; hoops, 4.45c.; bands, 4.15c.; shapes, 3.50c.; plates, 3.50c.; cold-rolled rounds, 4.15c.; cold-rolled flats, squares and hexagons, 4.65c.; open-hearth spring steel, 5c. to 6c.; No. 10 blue annealed sheets, 4c.; No. 28 black sheets, 4.70c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, 3.50c.; common wire nails, $3.35 per keg base; cement coated nails, $3 per keg.

Tool Steel.—Sales have been light, and prices are holding fairly well. Prices on 18 per cent tungsten high speed steel range from 70c. to 90c. per lb.

Coke.—There is little activity in the coke market. A southern Ohio silvery furnaces is inquiring for third quarter needs, estimated at 18,000 tons. The largest inquiry for foundry is for 500 tons for the Louisville & Nashville Railroad. Carload orders predominate, with prices unchanged from last week.

Connellsville furnace, $3.15; foundry, $4.50; New River foundry, $9 to $10; Wise County furnace, $3.75; foundry, $4.50; by-product foundry, $7.50; Connellsville basis.

Old Material.—Buying by dealers has strengthened the market for scrap considerably, but consumers' buying is light. Prices on some grades have again been marked up from 50c. to $1.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton

Heavy melting steel	$12.00 to	12.50
Scrap rails for melting	11.50 to	12.00
Short rails	16.50 to	17.00
Relaying rails	28.00 to	28.50
Rails for rolling	13.50 to	14.00
Old car wheels	12.50 to	13.00
No. 1 locomotive tires	13.50 to	14.00
Railroad malleable	15.00 to	15.50
Agricultural malleable	13.50 to	14.00
Loose sheet clippings	8.00 to	8.50
Champion bundled sheets	10.00 to	10.50

Per Net Ton

Cast iron borings	8.50 to	9.00
Machine shop turnings	7.50 to	8.00
No. 1 machinery cast	17.50 to	18.00
No. 1 railroad cast	14.00 to	14.50
Iron axles	20.50 to	21.00
No. 1 railroad wrought	10.00 to	10.50
Pipes and flues	7.00 to	7.50
No. 1 busheling	9.00 to	9.50
Mixed busheling	6.50 to	7.00
Burnt cast	10.00 to	10.50
Stove plate	10.00 to	10.50
Brake shoes	11.00 to	11.50

Sand Company Extends Operations

The Great Lakes Distributing Co. of Detroit has purchased foundry bank sand properties located near Saginaw, Mich., covering 160 acres adjacent to the Pere Marquette Railroad. Engineers estimate there are in excess of 100,000 carloads of sand suitable for core making purposes. Equipment is being purchased to increase the present daily loading capacity of 42 cars.

The Concrete Steel Co. has let contract for a two-story office and engineering building adjacent to their big warehouse in Birmingham, Ala. The company has been furnishing much of the steel for large apartment houses of Birmingham. William J. Piez is Southern manager.

Revolving distributors of the McKee type have been ordered by the Bethlehem Steel Co. for blast furnaces Nos. 10 and 11 of its Cambria plant, Jamestown, Pa. These will be supplied by the Arthur G. McKee & Co., Cleveland, and with these the Bethlehem company will have six McKee distributors at its Cambria plant.

Cleveland

Increased Demand for Shapes—Pig Iron Prices Decline 50 Cents

CLEVELAND, June 24.—The most encouraging feature in the market is the improvement in inquiry for structural material. Inquiries include one for a building requiring 2000 tons and another for 500 tons from unnamed interests as well as several small inquiries. The Standard Oil Co. of New York has taken bids on eight tanks for Buffalo requiring 3000 tons of steel and The Standard Oil Co. of Ohio will place 30 additional stills requiring 900 tons. Generally the volume of business has shown no improvement in the past week, although the slight improvement in the demand for plates in small lots recently noted is holding up and some of the mills report a tendency by consumers to place somewhat larger lots of steel for stock than recently. Plant operations in this territory are barely holding close to recent levels and most mills are showing resistance to further concessions. However, further weakness has developed on plates on which 2c. has been quoted for delivery from this territory, although the common range is from 2.10c. to 2.20c. Steel bars and structural material are holding fairly firm at 2.20c., although some business has been placed at 2.15c. Hot-rolled steel is unchanged at 2.50c. to 2.60c. and hoops and bands are quoted around 2.75c.

Jobbers quote steel bars, 3.21c.; plates and structural shapes, 3.31c.; No. 28 black sheets, 4.55c.; No. 28 galvanized sheets, 5.65c.; No. 10 blue annealed sheets, 3.60c. to 3.76c.; cold-rolled rounds, 4.10c.; flats, squares and hexagons, 4.60c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 3.96c.; narrower than 1 in. or lighter than No. 20 gage, 4.46c.; No. 9 annealed wire, $3.30 per 100 lb.; No. 9 galvanized wire, $3.75 per 100 lb.; common wire nails, $3.40 base per 100 lb.

Pig Iron.—Sales of pig iron are holding up in fair volume, but prices have further declined 50c. and $19 is now the commonly quoted Valley furnace price for foundry and malleable iron. A Cleveland interest has sold 3000 tons of basic iron at $19 Valley for delivery in the Pittsburgh district from a western Pennsylvania furnace having a slight freight advantage over the Valley. The competition for business in competitive territories is unusually keen and sales are reported of Lake furnace iron at delivered prices which figure below $19 at furnace for shipment to points where the seller had a freight disadvantage. In addition, differentials are being waived in some cases. While the recent buying by some of the large consumers appears to have stimulated sales, there has not been sufficient support to the market to hold it to the price at which these interests bought. Locally furnaces are still nominally asking $20.50 to $21 at furnace for Cleveland delivery, but quotations of $20 have appeared and the market will have to be established at that price to shut out $19 Valley iron. While the buying during the week was centered largely to Indiana and Michigan, a fair amount of business developed in the northern Ohio territory, considerable of which was taken by a Cleveland furnace on a $19 Valley basis. Two sales in Marion and Mansfield aggregate 1500 tons. In Michigan fair sized lots were bought by the automotive industry, being the first purchases reported in that field since the curtailment in automobile production. A Muncie, Ind., consumer bought 1500 tons of malleable iron. One producer reports sales of foundry and malleable iron exceeding 15,000 tons, including one 5000-ton lot. The American Steel Foundries inquired for 2000 to 3000 tons of basic iron for its Alliance plant which is reported to have been placed. A fairly active demand for Southern iron has developed in lots of 200 tons and under and prices have weakened. The sale of a 150-ton lot was made in Cleveland, Monday at $18.50.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace		$19.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	$20.00 to	21.00
Southern fdy., sil. 1.75 to 2.25	24.50 to	25.00
Malleable	20.00 to	21.00
Ohio silvery, 8 per cent		33.52
Stand. low phos., Valley furn.	27.00 to	27.50

Iron Ore.—With the further reduction in blast furnace operations, it is now expected that the season's ore movement will be around 40,000,000 tons, according to most recent estimates. Consumption of Lake Superior ore further decreased 1,051,398 tons during May, the decrease being more than double the falling off in April. The amount consumed last month was 3,830,457 tons as compared with 4,881,655 tons in April and with 5,307,609 tons in March. Consumption in May last year was 6,118,540 tons. Ore at furnaces and Lake Erie docks June 1 amounted to 21,607,619 tons as compared with 18,864,791 tons on June 1 last year. The amount at furnaces June 1 was 16,716,673 tons. The ore consumed by interior furnaces in the central district in May was 1,952,512 tons, a decrease of 694,285 tons. Eastern furnaces consumed 67,753 tons, a decrease of 55,701 tons and Lake front furnaces have consumed 1,707,094 tons, a decrease of 296,370 tons.

Sheets.—With a very light volume of sales there is no improvement in the market. The automotive industry has not resumed buying to any extent and many consumers will have sufficient stocks to carry them well into the third quarter. Prices are still irregular, although most mills are holding to the generally recognized quotations. Black sheets are being shaded to 3.50c.

Warehouse Business.—Local purchasers have reduced prices $3 a ton on steel bars, plates and structural material, and $4 a ton on hoops and bands. There have also been some slight revisions on blue annealed sheets.

Reinforcing Bars.—Demand for small lots is fair, but prices are weak. On rail steel bars, 2c. is the common quotation, but this is being shaded and on new billet steel bars, 2.15c., Pittsburgh, is fairly common.

Semi-finished Steel.—Several inquiries for sheet bars have developed in the last few days, apparently from mills that are figuring on sheet orders and which hope to secure some concessions from regular sheet bar quotations. The regular $40 price quoted did not appear attractive and no sales are reported.

Coke.—Foundries are buying only in small lots as needed and prices are unchanged with a range of from $4.50 to $6 for standard Connellsville coke.

Bolts, Nuts and Rivets.—Some bolt contracts for the third quarter have been booked at the regular 60 and 20 per cent discount for large machine bolts, but neither buyers nor sellers as a rule care to make contracts. Prices are still irregular and the demand is light. Rivet prices have been reduced to 2.60c. by the leading local producer, who has held to 2.75c., and to 70, 10 and 5 per cent off list on small rivets. These prices are being quoted for both current orders and third quarter contracts. Reports that half instead of full extras have been quoted are denied.

Old Material.—The market is firm with price advances of 50c. to 75c. a ton on blast furnace scrap and busheling, for which there is now some demand for blast furnace use, and flashings which have been relatively lower than other grades. Railroad malleable has declined owing to the absence of demand. Dealers paid $13.50 for cast-iron borings during the week for delivery to a local furnace. There is a limited demand for heavy melting steel in the Valley district with the price not above $16.25.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$14.00 to $14.25
Rails for rolling	15.50 to 16.00
Rails under 3 ft	16.25 to 16.75
Low phosphorus melting	16.50 to 16.75
Cast iron borings	13.50
Machine shop turnings	12.00 to 12.25
Mixed borings and short turnings	13.25 to 13.50
Compressed sheet steel	12.00 to 12.25
Railroad wrought	12.00 to 12.25
Railroad malleable	17.00 to 17.25
Light bundled sheet stampings	11.50 to 12.00
Steel axle turnings	13.25 to 13.50
No. 1 cast	20.00 to 20.50
No. 1 busheling	12.75 to 13.00
Drop forge flashings	10.25 to 10.50
Railroad grate bars	13.50 to 13.75
Stove plate	13.25 to 13.50
Pipes and flues	10.00 to 10.25

EXPORT BUSINESS FAIR

Japan Calls for Rails, Boiler Tubes and Structural Steel—South African Development

NEW YORK, June 24.—The recent improvement in trade with Japan is being maintained, exporters to the Far East quoting on a number of inquiries from the larger companies in Japan. The Chinese market is quiet except for a sporadic interest in wire shorts. Plain wire shorts are reported to have been offered to exporters at as low as $23 per ton, f.a.s. Atlantic port. Trade with South American markets is showing more activity than for some time, but tonnages involved are still small. Exporters in touch with competitive conditions in South America claim that American sellers have offered open-hearth rails in heavy sections at as low as $39 to $40 per ton, c.i.f. South American ports, to meet the European prices being quoted.

Japanese railroads still occupy a prominent position among prospective buyers of material. A recent inquiry with a closing date of June 25 is from Tokio municipality and calls for 4 miles of 91-lb. girder rails and 12 miles of 92-lb. high T-rails, 9 miles of which will be welded and 3 miles constructed with splice bars. Bids have been requested by another railroad on 20 miles of 60-lb. rails, A. S. C. E. specifications, with accessories, prices to be c.i.f. Kobe or Chemulto. On July 8, the South Manchuria Railway Co. will open bids on 4000 boiler tubes, 14 ft. 9 in. long, No. 11 B. W. G., and on July 2 bids will be opened on 8200 nonferrous condenser tubes. About 900 tons of structural steel is still pending from the Yokogawa Kyoryo Seisaku Sho., Osaka, a bridge works.

Of the inquiries and tenders recently in the market from Japanese companies, the Imperial Government Railways awarded 360 tons of heavy channels to Mitsui & Co.; the exporter, it is reported, placed the tonnage with the leading interest. The Kioto Oil Co., recently in the market for 13,400 boxes of oil can tin plate, is said to have placed the business with a large Japanese export house at a low price. Recent sheet business includes the award of 100 tons and 35 tons of copper bearing sheets to two Japanese exporters in New York.

Among South African projects for which tenders have been issued is construction work on the South African Railways, Ltd. W. W. Hoy, general manager, Park Station Chambers, Johannesburg, will receive bids until July 14, for furnishing structural steel for platform umbrella roofs; until July 28, for steel and wire rope; and until July 21, for copper bars for boiler stays. The Town Council of Johannesburg contemplates the erection of a new municipal power and light station, which it is estimated will cost £525,000. The machinery and equipment required will include three 10,000-kw. generators, one of which will be purchased immediately and installed in the present power station temporarily.

In connection with a project for a new import tariff on pig iron and steel, the President of Chile is urging encouragement of the siderurgical industry generally by payment of a State subsidy for a 10-year period, amounting to 15 gold pesos per ton on both iron and steel. The tariff bill and recommendations will be submitted to the Chilean Congress as soon as the committee completes its investigation, says Commercial Attaché R. H. Ackerman of Santiago, Chile.

The American Sheet & Tin Plate Co. made an unusual non-accident record in April. In eight of its plants not one accident occurred from which any time was lost by a worker, while in five plants there was only one accident in each from which time was lost.

Investigations in heat transmission are to be undertaken by the National Research Council, Washington, through its division of engineering. W. H. Carrier, Carrier Engineering Co., New York, is chairman of the committee in charge.

FABRICATED STEEL BUSINESS

Awards Approach 25,000 Tons, But New Projects Only 11,500 Tons

Bookings of fabricated steel for buildings and bridges total close to 25,000 tons for the past week but new work appearing calls for barely 11,500 tons. Among the awards are the following:

Tishman loft buildings, one on West Thirty-fourth Street, 4000 tons, and one on Lexington Avenue, 1000 tons, both to Levering & Garrigues Co.

Office building, 1560 Broadway, 1800 tons, to Levering & Garrigues Co.

Golding apartments, 2400 tons, to the Harris Structural Steel Co.

Brooklyn municipal building, 6300 tons, to Hay Foundry & Iron Works.

Apartment house, Madison Avenue and Fifty-fourth Street, 800 tons, to Taylor-Fichtor Steel Construction Co.

Penitentiary, Baltimore, 200 tons, to an unnamed fabricator.

Chesapeake & Ohio Railroad, bridge work, 275 tons, to an unnamed fabricator.

Portland, Me., power house, 450 tons, to Palmer Structural Steel Co.

Hospital, Pittsfield, Mass., 200 tons, to an unnamed fabricator.

Public Service Corporation, Kearny, N. J., substation, 675 tons, to Shoemaker Bridge Co.

Central Railroad of New Jersey, storage shed, Elizabeth, N. J., 150 tons, to an unnamed fabricator.

Norfolk & Western Railroad, bridge work, 150 tons, to Virginia Bridge & Iron Works.

Philadelphia highway bridge, 250 tons, to American Bridge Co.

Silverman Brothers store, Altoona, Pa., 550 tons, to McClintic-Marshall Co.

Allegheny Steel Co., Brackenridge, Pa., rod building, 150 tons, to McClintic-Marshall Co.

McKinney Mfg. Co., Pittsburgh, addition to plant, 275 tons, to Jones & Laughlin Steel Corporation.

Glendive, Mont., State bridge, 900 tons, to Minneapolis Steel & Machinery Co.

High school, Denver, Colo., 750 tons, to Burkhard & Sons.

General Electric Co., service building, Detroit, 350 tons, to Whitehead & Kales.

Ford Motor Co., Detroit, substation No. 16, 150 tons, to McClintic-Marshall Co.

Pioneer Trust & Savings Bank, building, Chicago, 235 tons, to Morava Construction Co.

Illinois Power & Light Corporation, Venice, Ill., smokestacks, breechings, and steel supports, 124 tons, to unnamed fabricator.

Cornelius Printing Co., building, Indianapolis, 150 tons, to Hethrington & Berner.

Phoenix Utility Co., Omaha, Neb., power plant, 600 tons, to Mississippi Valley Structural Steel Co.

Columbus Bolt Works, addition, 400 tons, general contract to E. H. Latham Co., steel work reported awarded to Columbus fabricator.

Louisville & Nashville Railroad, bridge work, 100 tons to McClintic-Marshall Co.

Big Four Railroad, bridge work, 600 tons, Wisconsin Bridge Co. low bidder.

McKinney Steel Co., 250 tons for buck stays for furnaces, to American Bridge Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

United States Government, store house, San Francisco, 1900 tons.

Knights of Columbus, building, Brooklyn, 2000 tons.

Hospital, Englewood, N. J., 400 tons.

Presbyterian Church, Broadway, New York, repairs, 500 tons.

Loft building, West Forty-first Street, 1000 tons.

Peoria & Eastern Railway, bridge work, 350 tons, bids close July 1.

Central of Georgia Railroad, bridge work, 200 tons, bids in.

U. S. Engineers' Office, St. Louis, 6 barges, 600 tons, bids received until July 10.

United Light & Power Co., power plant, Davenport, Iowa, 600 tons.

Midwest Pipe & Supply Co., St. Louis, warehouse, 300 tons.

Standard Oil Co., New York, oil tanks, 3000 tons.

Sandusky Cement Co., Sandusky, Ohio, plant extension, 200 tons.

Cole Brandt Co., Canton, Ohio, office building, 300 tons.

RAILROAD EQUIPMENT BUYING

Freight and Passenger Cars Ordered, But Little Fresh Inquiry

Several orders for freight and passenger cars were placed in the past week. Inquiries appeared for underframes, some repair work and for passenger cars. Below are listed the items:

The Denver & Rio Grande Western has ordered 34 automobile cars of the Standard Tank Car Co.

The Sandy Valley & Elkhorn has placed 50 hopper cars with the Youngstown Steel Car Co.

The Boston & Albany has purchased 4 switching engines, costing $33,450 each, from the American Locomotive Co.

The Wabash has placed 20 passenger cars with the American Car & Foundry Co.

The Florida East Coast has ordered 100 ballast cars from the American Car & Foundry Co.

The Detroit Edison Co. has placed 6 50-ton gondola cars with the Pressed Steel Car Co.

The Great Northern is inquiring for 100 underframes for automobile cars.

The Western Fruit Express was incorrectly reported last week as having bought 1000 steel underframes. This inquiry is still unclosed.

The Delaware, Lackawanna & Western has placed 40 caboose cars with the Mount Vernon Car Mfg. Co.

The Central of Brazil has placed 6 passenger cars with the American Car & Foundry Co.

The Reading is inquiring for 40 to 70 suburban coaches, 10 to 20 combination suburban cars and 10 baggage cars.

The Carnegie Steel Co. is inquiring for 10 gondola and 2 flat cars.

The Rock Island is inquiring for repairs on 146 national dump cars.

Freight cars in need of repair on June 1 totaled 189,219 or 8.3 per cent of the number on line, according to the American Railway Association. This was an increase of 7075 over the number reported on May 15. The total number in need of heavy repair was 138,536.

Sharon Plant Resumes

YOUNGSTOWN, June 24.—The Sharon Steel Hoop Co. Tuesday evening started three open-hearth furnaces at the Lowellville, Ohio, plant, which had been idle for two weeks. The company's Haselton sheet mill plant in Youngstown will resume in part next Sunday night. These resumptions will benefit approximately 1400 men.

Bulletin 43 of the National Research Council, Washington, covers the proceedings of the third annual meeting of the advisory board on highway research. This meeting was held at Washington, Nov. 8 and 9, 1923. In the 168 pages of the bulletin appear the discussions which took place at the meeting, together with reports of various committees having to do with specific topics, such as materials, tests, structural design, traffic analysis, bridges, finance, etc. Regarding the expenditures for this purpose, one report concluded that taxation of real estate for highway purposes bears too large a portion of the burden. This conclusion was based on an analysis of the situation in Wisconsin, where less than 9 per cent of the total highway expenditure came from vehicle license fees. The argument is made that the user of the highway should pay a larger share of its cost.

Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

Plates

Sheared, tank quality, base, per lb.....2.15c. to 2.20c.

Structural Materials

Beams, channels, etc., base, per lb.....2.20c. to 2.25c.
Sheet piling .....2.30c. to 2.40c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.20c. to 2.25c.
Soft steel bars for cold finishing.....$3 per ton over base
Reinforcing steel bars, base.....2.20c. to 2.25c.
Refined iron bars, base, per lb.....3c.
Double refined iron bars, base, per lb.....4.75c.
Stay bolt iron bars, base, per lb.....6.50c. to 7.00c.

Hot-Rolled Flats

Hoops, base, per lb.....2.75c.
Bands, base, per lb.....2.75c.
Strips, base, per lb.....2.50c. to 2.75c.

Cold-Finished Steel

Bars and shafting, drawn or rolled, base, per lb.....2.90c.
Bars and shafting, drawn or rolled, l.c.l., per lb.2.90c. to 3.00c.
Shafting, turned and polished, base, per lb....3.00c. to 3.10c.
Bars, S. A. E. Series, No. 2100.....4.75c.
Bars, S. A. E. Series, No. 2300.....6.25c.
Bars, S. A. E. Series, No. 3100.....5.25c.
Strips, base, per lb.....4.50c.

Wire Products

(To jobbers in car lots)

Nails, base, per keg.....$2.90
Galvanized nails, 1 in. and over.....$2.25 over base
Galvanized nails, less than 1 in..... 2.50 over base
Bright plain wire, base, No. 9 gage, per 100 lb.....$2.65
Annealed fence wire, base, per 100 lb..... 2.80
Spring wire, base, per 100 lb..... 3.70
Galvanized wire No. 9, base, per 100 lb..... 3.25
Galvanized barbed, base, per 100 lb..... 3.70
Galvanized staples, base, per keg..... 3.70
Painted barbed wire, base, per 100 lb..... 3.35
Polished staples, base, per keg..... 3.35
Cement coated nails, base, per count keg..... 2.35
Bale ties, carloads to jobbers
75, 5, 5 and 2½ to 75 and 5 per cent off list
Woven fence, carloads (to jobbers).....67½ per cent off list
Woven fence, carloads (to retailers).....65 per cent off list

Bolts and Nuts

Machine bolts, small, rolled threads,
60, 20 and 10 per cent off list
Machine bolts, all sizes, cut threads..60 and 20 per cent off list
Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads..60 and 20 per cent off list
Carriage bolts, cut threads, all sizes..60 and 20 per cent off list
Lag bolts .....65 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....50 and 10 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in.,
50, 10 and 10 per cent off list
Larger and longer sizes.....50, 10 and 10 per cent off list
Hot pressed squares or hex. nuts, blank.....5c. off list
Hot pressed nuts, tapped.....5c. off list
C.p.c. and t. square or hex. nuts, blank.....4.50c.
C.p.c. and t. square or hex nuts, tapped.....4.50c
Semi-finished hex. nuts:
⅝ in. and smaller, U. S. S.....80, 10 and 5 per cent off list
⅝ in. and larger, U. S. S.....75, 10 and 5 per cent off list
Small sizes, S. A. E.....80, 10, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger.....75, 10 and 5 per cent off list
Stove bolts in packages.....80, 10 and 5 per cent off list
Stove bolts in bulk.....80, 10, 5 and 2½ per cent off list
Tire bolts .....60 and 10 per cent off list
Bolt ends with hot pressed nuts.....60 and 5 per cent off list
Bolt ends with cold pressed nuts.....50 and 5 per cent off list
Turnbuckles, with ends, ½ in. and smaller,
55 and 5 per cent off list
Turnbuckles, without ends, ½ in. and smaller,
70 and 10 per cent off list
Washers .....5.75c. to 6.00c.
Lock washers .....80 per cent off list

Semi-Finished Castellated and Slotted Nuts

(To jobbers and consumers in large quantities f.o.b. Pittsburgh.)

	Per 1000 S. A. E.	Per 1000 U. S. S.		Per 1000 S. A. E.	Per 1000 U. S. S.
¼-in.	$4.25	$4.25	⅝-in.	$13.25	$13.50
5/16-in.	4.90	4.90	¾-in.	16.25	16.50
⅜-in.	5.90	6.25	⅞-in.	22.50	23.00
7/16-in.	7.50	8.50	1-in.	34.00	34.00
½-in.	9.75	10.00	1-in.	53.00	55.00

Larger sizes—Prices on application.

Cap and Set Screws

Milled hex. head cap screws.....75, 10 and 5 per cent off list
Milled standard set screws, case hardened,
75, 10 and 5 per cent off list
Milled headless set screws, cut thread,
75, 10 and 5 per cent off list
Upset hex. head cap screws, U. S. S. thread,
80, 10 and 10 per cent off list
Upset hex. head cap screws, S. A. E. thread,
80, 10 and 10 per cent off list
Milled studs .....65 and 10 per cent off list

Rivets

Large structural and ship rivets, base, per 100 lb..$2.60 to $2.65
Small rivets .....70, 10 and 5 per cent off list

Track Equipment

Spikes, ⅝ in. and larger, base, per 100 lb.....$2.90 to $3.00
Spikes, ½ in. and smaller, base, per 100 lb.... 3.25 to 3.40
Spikes, boat and barge, base, per 100 lb..... 3.25 to 3.40
Track bolts, all sizes, base, per 100 lb..... 3.75 to 4.25
Tie plates, per 100 lb..... 2.50 to 2.55
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
⅛	45	19½	⅛ to ⅜.....	+11	+39
¼ to ⅜.....	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½.....	30	13
1 to 3.....	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6.....	59	47½	2½	26	11
7 and 8.....	56	43½	3 to 6.....	28	13
9 and 10.....	54	41½	7 to 12.....	26	11
11 and 12....	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3.....	61	50½
¼ to ⅜.....	47	30½	¼ to ⅜.....+19		+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½.....	60	49½	1 to 1¼.....	30	14

Lap Weld, extra strong, plain ends

2	53	42	2	23	9
2½ to 4.....	57	46½	2½ to 4.....	29	15
4½ to 6.....	56	45½	4½ to 6.....	28	14
7 to 8.....	52	39½	7 to 8.....	21	7
9 and 10.....	45	32½	9 to 12.....	16	2
11 and 12....	44	31½			

To the large jobbing trade the above discounts are increased by one point, with supplementary discount of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent on galvanized.

Boiler Tubes

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.....	27	1½ in. .....+18	
2½ to 2¾ in.....	37	1¾ to 1⅞ in.....+ 8	
3 in.	40	2 to 2¼ in.....— 2	
3¼ to 3¾ in.....	42½	2½ to 3 in.....— 7	
4 to 13 in.....	46	3¼ to 4½ in.....— 9	

Standard Commercial Seamless Boiler Tubes

Cold Drawn			
1 in.	55	3 and 3¼ in.....	36
1¼ and 1½ in.....	47	3½ and 3¾ in.....	37
1¾ in.	31	4 in.	41
2 and 2¼ in.....	22	4½ in. and 5 in.....	33
2½ and 2¾ in.....	32		

Hot Rolled

3 and 3¼ in.....	38	4 in.	43
3½ in. and 3¾ in....	39		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30, base.....85 per cent off list
Carbon 0.30 to 0.40, base.....83 per cent off list
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage....	15	2¼-in. O.D. 10 gage..	20
2-in. O.D. 11 gage....	16	3-in. O.D. 7 gage.....	35
2-in. O.D. 10 gage....	17	1½-in. O.D. 9 gage...	15
2¼-in. O.D. 12 gage..	17	5⅝-in. O.D. 9 gage...	55
2¼-in. O.D. 11 gage..	18	5½-in. O.D. 9 gage...	57

Tin Plate

Standard cokes, per base box.....$5.50

Terne Plate

(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.00	20-lb. coating I. C....	$14.90
8-lb. coating I. C....	11.30	25-lb. coating I. C....	16.20
12-lb. coating I. C....	12.70	30-lb. coating I. C....	17.35
15-lb. coating I. C....	13.95	35-lb. coating I. C....	18.35
		40-lb. coating I. C....	19.35

Sheets

Blue Annealed

Nos. 9 and 10 (base), per lb.....2.75c. to 2.80c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.50c. to 3.65c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb., 5.10c.

Galvanized

No. 28 (base), per lb.....4.75c. to 4.85c.

Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....5.30c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.75c. to 3.85c.

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.65
Old range non-Bessemer, 51½ per cent iron	4.90
Mesabi Bessemer, 55 per cent iron	5.40
Mesabi non-Bessemer, 51½ per cent iron	4.75

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.75c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal	45c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus	42c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, per unit, in 60 per cent concentrates	$8.75 to $10.00
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f. Atlantic seaboard	19.00 to 22.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	75c. to 85c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$107.50
Ferromanganese, British, 80 per cent f.o.b. Atlantic port, duty paid	107.50
Ferrosilicon, 50 per cent, delivered	75.00
Ferrosilicon, 75 per cent	140.00
Ferrotungsten, per lb. contained metal	90c. to 93c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	10.75c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.	10.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent	$35.00 to $37.00
Spiegeleisen, domestic, 16 to 19 per cent	34.00 to 36.00

Ferrosilicon, Bessemer, 10 per cent, $39.50; 11 per cent, $42, 12 per cent, $43.50; 14 to 16 per cent (electric furnace), $40.00.

Silvery iron, 5 per cent, $27.00; 6 per cent, $28.00; 7 per cent, $29.00; 8 per cent, $30.50; 9 per cent, $32.50; 10 per cent, $34.50; 11 per cent, $37.00; 12 per cent, $39.50.

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines		$20.00 to $22.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines		22.00 to 23.50
Per 1000 f.o.b. works:		
Fire Clay:	High Duty	Moderate Duty
Pennsylvania	$40.00 to $45.00	$37.00 to $40.00
Maryland	45.00 to 47.00	40.00 to 42.00
Ohio	40.00 to 43.00	37.00 to 39.00
Kentucky	42.00 to 43.00	37.00 to 39.00
Illinois	——	37.00 to 42.00
Missouri	42.00 to 45.00	35.00 to 40.00
Ground fire clay, per net ton		6.00 to 7.00
Silica Brick:		
Pennsylvania		38.00
Chicago		47.00
Birmingham		50.00
Ground silica clay, per net ton		7.50 to 8.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		47.00

Semi-Finished Steel, F.O.B. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$33.00
Rolling billets, 2-in. and under	38.00
Forging billets, ordinary carbons	43.00
Sheet bars, Bessemer	40.00
Sheet bars, open-hearth	40.00
Slabs	38.00
Wire rods, common soft, base, No. 5 to ⅜-in.	$48.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon, 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	2.20c. to 2.25c.
Skelp, sheared, per lb.	2.20c. to 2.25c.
Skelp, universal, per lb.	2.20c. to 2.25c.

Finished Iron and Steel, F.O.B. Mill

Rails, heavy, per gross ton	$43.00
Rails, light, new steel, base, lb.	1.90c. to 2.00c.
Rails, light, rail steel, base, per lb.	1.75c. to 1.80c.
Bars, common iron, base, per lb., Chicago mill	2.20c.
Bars, common iron, Pittsburgh mill	2.40c.
Bars, rail steel reinforcing, base, per lb.	2.10c. to 2.15c.
Rail steel bars, base, per lb., Chicago mill	2.10c.
Cold-finished steel bars, base, Chicago, per lb.	2.90c.
Ground shafting, base, per lb.	3.40c.
Cut nails, base, per keg	$3.60

Alloy Steel

S. A. E. Series Numbers		Bars 100 lb.
2100*	(1¼% Nickel, 10 to 20 per cent Carbon)	$3.50
2300	(3½% Nickel)	5.00
2500	(5% Nickel	$6.50 to 7.00
3100	(Nickel Chromium)	4.00
3200	(Nickel Chromium)	5.75
3300	(Nickel Chromium)	8.00
3400	(Nickel Chromium)	7.00 to 7.25
5100	(Chromium Steel)	3.75
5200*	(Chromium Steel)	7.50 to 8.00
6100	(Chromium Vanadium bars)	4.75
6100	(Chromium Vanadium spring steel)	4.50 to 4.75
9250	(Silicon Manganese spring steel)	3.75 to 4.00
	Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.75
	Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.50
	Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	4.25
	Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled alloy steel bars, forging quality, per 100 lb., f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are $10 per gross ton less than net ton prices for bars of same analysis. On smaller than 4 x 4-in. billets the net ton bar price applies.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S.A.E. system.

High Speed Twist Drills

F.o.b. factory

Taper shank 1½ in. diameter and smaller	50 per cent off list
Taper shank larger than 1½ in. diameter	45 per cent off list
Wire and jobber sizes	50 and 10 per cent off list

Freight Rates

All rail freight rates from Pittsburgh on finished iron and steel products, carload lots, 36,000 lb. minimum carload, per 100 lb.:

Philadelphia, domestic	$0.32	Buffalo	$0.265	St. Louis	$0.43	*Pacific Coast	$1.15
Philadelphia, export	0.235	Cleveland	0.215	Kansas City	0.735	*Pac. Coast, ship plates	1.20
Baltimore, domestic	0.31	Cleveland, Youngstown Comb.	0.19	Kansas City (pipe)	0.705	Birmingham	0.53
Baltimore, export	0.225	Detroit	0.29	St. Paul	0.60	Memphis	0.56
New York, domestic	0.34	Cincinnati	0.29	Omaha	0.735	Jacksonville, all rail	0.70
New York, export	0.255	Indianapolis	0.31	Omaha	0.705	Jacksonville, rail and water	0.415
Boston, domestic	0.365	Chicago	0.34	*Denver	1.15	New Orleans	0.67
Boston, export	0.255			†Denver (pipe)	1.17		

*Applies minimum carload 30,000 lb. †Minimum loading 46,000 lb.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 35c.; ship plates, 40c.; ingots and muck bars, structural steel, common wire products, including cut or wire nails, spikes, and wire boops, 40c.; sheets and tin plates, 40c.; sheets No. 12 gage and lighter, 50c.; rods, 40c.; wire rope cables and strands, 45c.; wire fencing, netting and stretcher, 40c.; pipes not over 12 in. in diameter, 55c.; over 12 in. in diameter, 2½c. per in. or fraction thereof additional. All rates per 100 lb. in carload lots, minimum 36,000 lb.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
June	Lake	Electro-lytic*	New York	New York	St. Louis	New York	St. Louis
18.....	12.75	12.25	43.25	7.20	6.95	6.15	5.80
19.....	12.75	12.25	42.70	7.10	6.90	6.07½	5.72½
20.....	12.62½	12.25	43.00	7.10	6.90	6.10	5.75
21.....	12.62½	12.25	....	7.10	6.90	6.10	5.75
23.....	12.62½	12.25	43.50	7.00	6.85	6.10	5.75
24.....	12.62½	12.25	43.12½	7.00	6.80	6.10	5.75

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, June 24.

Owing to the general depression in business, the metal markets exhibit very little activity. Copper has again declined in the absence of active demand. The tin market is easier, with sales very few. Demand for lead has fallen off somewhat and prices are a little lower. The zinc market is lifeless but prices are fairly firm.

Copper.—There is very little change in the condition of the market. Consumers remain indifferent both here and abroad and, in the absence of any active buying, prices of electrolytic copper have receded slightly so that the minimum is about 12.50c., delivered, with a limited amount of metal reported available at 12.37½c. Operations in the finished copper and brass industries are at a considerably reduced percentage of capacity and transactions, which are recorded, have embraced only small lots here and there. The entire situation is a waiting one, with consumers looking for orders and possibly lower prices and producers attempting to reduce output and keep the market from going lower. Lake copper is quoted, largely nominal, at 12.62½c., delivered.

Tin.—The week has been another very quiet one and transactions have been extremely limited. Consumers of tin show absolutely no interest and are making no purchases, due largely to the falling off in both the tin plate and automobile industries. In fact, some consumers of tin are reselling from their stocks. The general situation in the tin market is reflected in a recent statement that practically no orders for pig tin have been placed by tin plate makers because of the almost entire lack of bookings since the opening of the books for the third quarter and last half of the year. On June 18 the market developed weakness and prices fell off nearly ⅞c. per lb. during the day without bringing in buyers. This is regarded as an unusual and unsatisfactory situation. On June 18 about 100 tons was sold at a range of 42.60c. to 42.85c. and during the week 50 tons was sold on the New York Metal Exchange. Total transactions for the week would not exceed 500 tons, all among dealers and importers. Arrivals thus far this month have been 3595 tons and the quantity reported afloat is 4492 tons. The market both yesterday and today has been very quiet, with spot Straits tin quoted today at 43.12½c., New York. London quotations are lower than a week ago, with spot standard quoted at £222, future standard £221.15 and spot Straits at £224 10s., with the Singapore quotation at £226.

Lead.—Early last week the market experienced a spurt in demand, with prices reaching as high as 7.25c., New York, in the outside market, but since then an easier tone has developed and business has fallen off. The price of the leading interest still stands at 7c., New York, and the outside market has again fallen to practically the same level, or 7c., New York, with the quotation at St. Louis 6.80c.

Zinc.—The market continues to be largely influenced by fluctuations in London. There the market has been a little higher this week and the tone here is correspondingly firmer, but quotations range between 5.75c. and 5.80c., St. Louis, or 6.10c. to 6.15c., New York, or about 10 points lower than a week ago. Business is light and sales are confined to a few lots now and then to galvanizers and brass makers, the former operating at a very low rate of capacity.

Nickel.—Quotations for shot and ingot nickel are unchanged at 27c. to 32c. per lb., with electrolytic nickel held at 30c. to 32c. by the leading producers. Shot and ingot nickel in the outside market are quoted at 28c. to 32c. per lb.

Antimony.—Chinese metal for spot and June delivery is stronger at 8.50c., duty paid, New York, in wholesale lots.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted by importers at 26.50c. to 27c. per lb., duty paid, delivered.

Old Metals.—The market is uncertain and demand slow. Dealers' selling prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible	12.00
Copper, heavy and wire	11.00
Copper, light and bottoms	10.00
Heavy machine composition	9.50
Brass, heavy	7.75
Brass, light	6.25
No. 1 red brass or composition turnings	8.50
No. 1 yellow rod brass turnings	7.25
Lead, heavy	6.00
Lead, tea	5.00
Zinc	4.25
Cast aluminum	16.00
Sheet aluminum	16.50

Chicago

June 24.—Tin, lead and zinc have declined in an exceedingly quiet market. Among old metals, however, grades of copper have declined while tin has advanced. We quote in carload lots: Lake copper, 13c.; tin, 44.50c.; lead, 6.95c.; spelter, 5.75c.; antimony, 10.50c., in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 10.25c.; copper bottoms, 8.50c.; red brass, 7.50c.; yellow brass, 6.50c.; lead pipe, 6c.; zinc, 3.75c.; pewter, No. 1, 21c.; tin foil, 27c.; block tin, 31c.; all buying prices for less than carload lots.

Plant of Cleveland Steel Tube Co. Sold

CLEVELAND, June 24.—The sale of the plant of the Cleveland Steel Tube Co., Cleveland, to Morris G. Songer and associates, Pittsburgh, for $200,000 has been authorized by the stockholders. The plant, which was never operated, was built for the manufacture of butt weld pipe by the International Steel Tube Co., which failed. It is stated that the new owners will incorporate as the Union Tube Co. and will place the plant in operation.

Authorized capital stock of the Westinghouse Electric & Mfg. Co. was increased $75,000,000 to $200,000,000 at a recent meeting, following which President E. M. Herr stated that "while our business is somewhat less than for the corresponding period a year ago, the decrease has not been of sufficient volume to materially affect operations, and our commercial people believe that it will improve in the fall."

In a recent historical review of the Clark Brothers Bolt Co., Southington, Conn., appearing in the *Hartford Daily Courant*, it is revealed that Charles H. Clark, president of the company, still active and energetic, is in his ninety-third year. The origin of the company, a pioneer in the bolt industry, dates back to 1851. Among the employees are eight workers whose average stay with the company is fifty-four years.

Mine output of copper in the United States, according to figures of the United States Geological Survey, was 131,054,000 lb. in May, a slight decline from the April figure of 131,928,000 lb. Production in May, 1923, was 125,438,000 lb.

Hydro-electric Power Development in Canada

As a result of extensive plans for hydro-electric power development in different parts of Canada, the Canadian General Electric Co. and its subsidiary, the Canadian Allis-Chalmers Co., Toronto, Ont., are busy on the manufacture of heavy equipment, including turbines and generators, the Montreal works being particularly busy at present. Included in the business on the company's books are orders for a big generator for the Ontario Hydro Electric Commission for installation at Chippewa, Ont., and two turbines and generators for the Quebec Development Co., which is financed by the Duke and Price interests; other contracts in hand include equipment for the British Columbia Electric Railway; the West Kootenay Power Co.; the Canadian Niagara Power Co.; the Wahnapitae Power Co.; the Mond Nickel Co., and the South Bay Power Co. On the other hand the demand for general industrial equipment and household electric fixtures is comparatively quiet. Representing the General Electric Co. of the United States, which has secured control of the Canadian General Electric Co., D. C. Durland has been made a director of the Canadian company and has associated himself with the management of the Toronto works.

Recession in Manufacturing

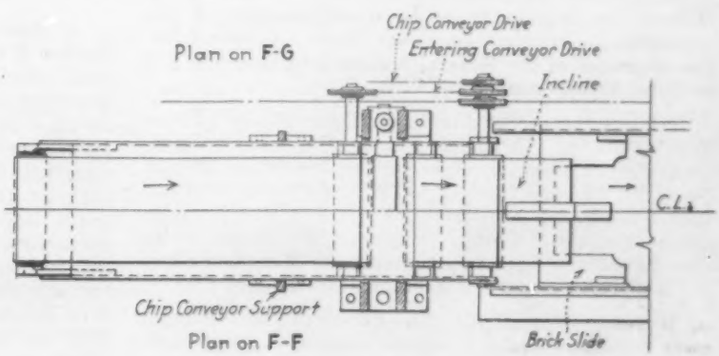
A further recession in manufacturing activity is shown by the latest figures compiled by the National Industrial Conference Board of 247 Park Avenue, New York. Although there was no significant change in earnings in April, employment declined 2.5 per cent from the preceding month and the average hours of work fell off nearly half an hour a week. From approximately 1700 plants which furnish data to the board, ten reported a shutdown in April and 150 others were working less than normal hours.

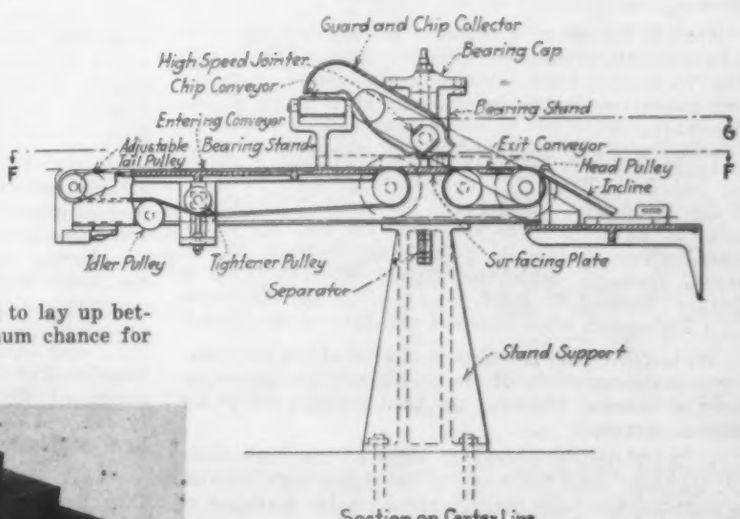
"An upward movement was noticeable in 'real' earnings, or the purchasing value of money earnings, due to the drop in the cost of living between March and April. 'Real' weekly earnings of all those employed in April stood 32 per cent higher than in July, 1914."

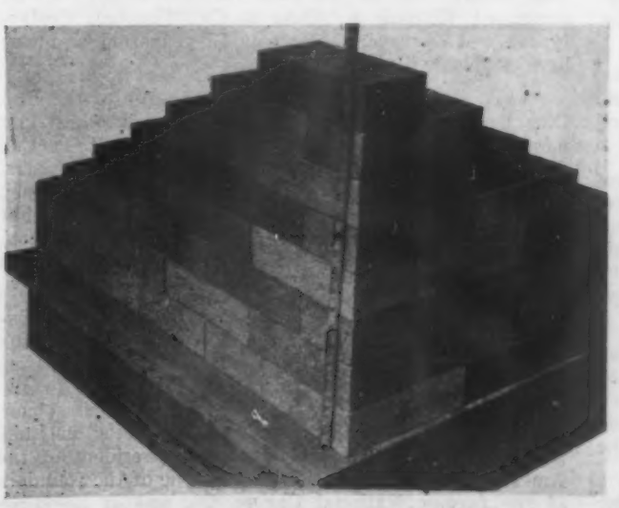
New Process for Producing Uniform Firebrick

In line with the effort to secure uniformity in the size of fire brick, typified by the dictum of the Refractories Manufacturers Association that the variation of brick produced by its members do not exceed 3 per cent, the Ashland Fire Brick Co., Ashland, Ky., has developed a device that trims the brick after they have been shaped and put through a pressing operation. The process includes the addition of a standard repressin, while the brick itself undergoes two extra trimming and repressing operations.

Brick manufactured by the method in use at Ashland pass under a rotary cutter equipped with four knives operating at approximately 4000 r.p.m., after they are taken from the repress, which formerly completed the manufacturing process up to the point of putting the brick on the tunnel cars for drying. The cutter is constructed so that it can be adjusted to take care of wear on the blades, and to secure the desired thickness of the various brick being manufactured. The improvement results in a brick that is said to lay up better, require less mortar and offer minimum chance for failure at the joints.







Unretouched Photograph of Standard 9 x 4½ x 2½ In. Straight Ashland Crown Steam-Pressed Fire Brick, Showing the Uniformity of Size Made Possible by the New Trimming Device and Double Pressing

Above Are Two Views of the Machine Which Produces the Uniform Thickness. The cutter or jointer operates at high speed to remove material extending beyond standard thickness

PERSONAL

Prof. Paul A. Cushman, recently of the department of mechanical engineering of the Polytechnic Institute in Brooklyn, has become associated with the University of Arkansas.

H. A. Carmichael has been elected treasurer of the Westinghouse Electric International Co. to succeed F. L. Townsend, who died some time ago.

Robert W. Weidenbacker has gone to Java where he is to be assistant manager for the Baldwin Locomotive Works of its office for Malaysia.

A. J. Jupp, vice-president Lunkenheimer Co., Cincinnati, left last week for London, England, to attend the world power conference which convenes June 30. He will represent the valve and pipe-fittings industry of the United States at the conference, which is to consider how the industrial and scientific resources of power may be adjusted nationally and internationally by a study of the potential resources of each country.

W. C. Brumble has been transferred by the General Motors Corporation from assistant manager in the standards department, Chevrolet Motor Co., to production manager of the General Motors International A/S at Copenhagen, Denmark.

John A. Guyer of the L. B. Rockwell Co., Union Trust Building, Cleveland, has been appointed Cleveland district sales manager of the Interstate Iron & Steel Co., Chicago, succeeding R. S. LeBarre, who has been transferred to Detroit, where he is district sales manager of the Interstate company. Mr. Guyer is also Cleveland district sales manager of the Mansfield Sheet & Tin Plate Co., and the Ashtabula Steel Sheet Co.

William Gray Clyde, vice-president and general sales manager of the Carnegie Steel Co., Pittsburgh, received the honorary degree of doctor of applied science last week from the Pennsylvania Military College, Chester, Pa., of which he is an alumnus.

Fred H. Taylor, who has been in the manufacturers' sales department of the American Steel & Wire Co., New York, since 1910, has resigned to become connected with the investment house of James H. Oliphant & Co., New York.

L. W. Landay, formerly with the Hyman-Michaels Co. and the Wilkoff Co., has been appointed manager of the Pittsburgh office, Frick Building, of the Emerman Co., Erie, Pa. The Emerman Co. also has established offices in the Book Building, Detroit, M. M. Broad, formerly with the Hyman-Michaels Co., in charge. Samuel G. Staff, who was in the Emerman Co.'s Pittsburgh office, becomes assistant to Mr. Broad.

W. L. Nies, who has been in charge of the engineering department of the Reynolds Electric Co., manufacturer of motors, Chicago, has been transferred to the sales department.

C. K. Wehn, in charge of sales of the Blaw-Knox Co. standard steel buildings in the Pittsburgh district, in addition has been made assistant sales manager of the standard building department.

W. T. Hall, purchasing agent Brewster & Co., New York, was elected president of the Purchasing Agents' Association of New York at the annual meeting held June 17. Other officers elected were: First vice-president, A. Fred Macklin, Consolidated Gas Co., New York; second vice-president, R. Eberhardt, Sperry Gyroscope Co., Brooklyn.

N. H. Gellert, president Gellert Engineering Co., Philadelphia, read a paper on the electrical cleaning of blast furnace gases at the joint meeting of the Eastern States Blast Furnace and Coke Oven Association and the Blast Furnace and Coke Oven Association of the Chicago District, June 5, in Cleveland.

Arthur F. Woodford, secretary Sessions Foundry Co., has been made a director of the Bristol, Conn., Chamber of Commerce, succeeding Charles R. Horton, of the Horton Mfg. Co.

Elmer H. Havens, formerly president of the Locomobile Co., Bridgeport, Conn., was recently named president of the new Norwalk Co., formerly the Norwalk Iron Works. He has acted as receiver since the latter company went into bankruptcy about six months ago.

James Hartness, president American Engineering Council and of the Jones & Lamson Machine Co., Springfield, Vt., addressed the Cleveland Engineering Society at its forty-fourth annual banquet held at the Midday Club rooms June 24. His subject was "Team Work in Engineering."

Robert J. Anderson, formerly with the United States Bureau of Mines at Pittsburgh, has opened an office as consulting metallurgical engineer in Boston. He will specialize in the metallurgy of aluminum. His address is Box 111, Fenway Station, Boston.

OBITUARY

EDWARD PAYSON WILLIAMS, treasurer of Pickands, Mather & Co., iron ore merchants, Cleveland, for many years, died at his home in that city on June 16. He was born at Conneaut, Ohio, June 5, 1838, and served throughout the Civil War as a member of the 15th Pennsylvania Cavalry. At the close of the war he returned North and in 1866 entered the employ of Cleveland, Brown & Co., iron brokers of Cleveland. Six years later, together with Col. James Pickands and Maj. Harry Pickands, he went into the northern Michigan iron ore region. They took up activities at Munising and Bay City, with offices at Marquette. In 1885 Mr. Williams went to St. Louis as secretary of the Western Steel Co. Five years after, he returned to Cleveland to become associated with Pickands, Mather & Co. In 1893 he became secretary of the Brown-Bonnell Co., Youngstown, Ohio, where he stayed until 1896. In that year he returned to the Pickands company and remained there until his death. He was active until recently. Mr. Williams is survived by a son, E. H. Williams, president Vulcan Mold & Iron Co., Latrobe, Pa., and a daughter, Mrs. M. L. Mozier of East Orange, N. J.

WILLIAM A. FIELD, for 13 years up to 1917 general superintendent of the Illinois Steel Co., South Chicago, died suddenly at his home in Chicago, June 22. Mr. Field was for many years connected with Illinois Steel Co., having been assistant general superintendent at the South Works prior to his promotion to general superintendent. In 1917 he went to Canton, Ohio, to take charge of the plant of the United Alloy Steel Corporation, and subsequently managed the Matthiessen & Hegeler Zinc Co., La Salle, Ill. About five years ago he organized William A. Field & Co., Chicago, electrotypers and engravers. He was 55 years old and was born at Nashville, Tenn.

A. H. CONDELL, in past years in charge of the Elm City Brass & Rivet Co., Plainville, Conn., plant, and more recently vice-president of the Plainville Trust Co., died at his home in Plainville, June 15, aged 75 years.

ALBERT GWYNN SPENCER, president Safety Emery Wheel Co., Springfield, Ohio, died at his home in that city June 16, aged 65 years. He was born in Hamilton, Ohio, but had spent the greater part of his life in Springfield.

BENJAMIN F. MILES, founder of the Browning Engineering Co., Cleveland, and president of that company a number of years, died June 22. He graduated from the University of Rochester in 1881 and in the following year located in Cleveland where he was first connected with the Tod-Stambaugh Co., dealer in Lake Superior iron ore. Later he became president of the American Linseed Co. He was also one of the founders of the former National Carbon Co. and at one time president of the Western Bank Note Co.

DIESEL ENGINES FOR FREIGHTERS

Shipping Board Vessels to Be Modernized—Electric Drive to Be Used for Auxiliaries

WASHINGTON, June 23.—Replacing of the present motive power in United States Shipping Board vessels with modern and reliable Diesel machinery is expected by the board to prove competitive and valuable. Plans to go forward with the work have been taken up, following the adoption of an amendment by Congress to the Merchant Marine Act of 1920. The amendment provides that $25,000,000 of the Shipping Board construction loan fund may be used to install Diesel type electric-drive engines in a number of Government-owned vessels.

About 375 vessels have been selected by the board as being most suitable for the installation of modern Diesel propelling power. It is conceded that the cost will be high, but the point is made that a motor ship generally consumes when at sea but one-third, and when in port but one-tenth, of the fuel burned by a steamship of equivalent power. This saving of fuel plus that accruing from reduced engine room personnel and consequent reduction in wages and subsistence, according to a statement issued by the board, has been found in practice to absorb the cost of conversion in a period of from six to seven years.

It is also pointed out that the board's vessels are now about five years old as an average and fairly well preserved and that, once they are thoroughly overhauled, they might be considered as good as new. Machinery, however, deteriorates faster than a steel hull, this being accentuated in a steam plant by obsolescence, in view of the ever increasing number of new and converted motorships. Therefore, it is stated, even with unavoidable improvements in the Diesel art, at the end of six or seven years a converted vessel would be more desirable and possess a market value much greater than it would as a steamer.

As an initial step the board contemplates converting about 60 large single-screw freighters (some 600,000 deadweight tons) requiring engines of approximately 2500 to 2700 shaft horsepower each, at 90 to 95 r.p.m. for a service speed of about 11 knots. Electrically-operated auxiliaries of modern, simple and rugged types will be extensively used. The selection of main and auxiliary machinery will be done with a view to standardization, so that high-grade equipment may be procured at reasonable prices.

Decreased Coal Consumption

The survey of coal consumed for industrial purposes made by the International Association of Purchasing Agents shows that business of those reporting decreased 13.5 per cent in May as compared with the preceding month. Of the total number of reports received from consumers of industrial coal for May, 19 per cent showed increases in business, 28 per cent remained stationary and 53 per cent showed decreases as compared to the preceding month. The estimated industrial stocks, production and consumption follow:

Estimated Industrial Stocks on Hand

	Net Tons
March 1, 1924	74,708,000
April 1, 1924	72,192,000
May 1, 1924	63,403,000
June 1, 1924	57,428,000

	Total Production Net Tons	Estimated Industrial Consumption
Month of February	53,355,000	39,441,000
Month of March	48,713,000	40,782,000
Month of April	36,364,000	36,686,000
Month of May	39,217,000	31,693,000

The industrial consumption during May decreased 4,993,000 net tons as compared to the preceding month. The industrial stocks were reduced approximately 5,975,000 tons.

Based on the May consumption, the industrial consumer had in his bins sufficient coal to meet his requirements for a period of 54 days.

Automobile Production in May

Department of Commerce figures show a total of 279,439 passenger cars and 33,374 trucks turned out during May, the aggregate being 312,813 vehicles. This is a considerable drop from the revised figures for April, consisting of 337,045 passenger cars and 36,154 trucks, and is still farther below the production for May, last year—the highest figure in our history—with 350,460 passenger cars and 43,730 trucks. The present figures are somewhat above the preliminary figures given on page 1715 of our issue of June 12.

For the five months which have elapsed this year, Department of Commerce figures, revised for the first four months, show a total of passenger cars aggregating 1,588,567, with trucks aggregating 163,710, or a total of 1,752,277 vehicles. This compares with 1923 vehicles of 1,493,514 passenger cars and 159,004 trucks, or an aggregate of 1,652,518 vehicles. As last year's figure was the highest ever reached up to that time, the present excess of 100,000 vehicles provides a new high record for the first five months of any year.

Bookings of Steel Castings in May

WASHINGTON, June 20.—The Department of Commerce announces May bookings of steel castings, based on reports from companies representing over two-thirds of the commercial-castings capacity of the United States, as 55,837 tons, compared with 65,670 tons in April. The following table shows the bookings of commercial steel castings for the past 17 months by 70 identical companies, with a monthly capacity of 100,700 tons of which 39,100 tons are usually devoted to railroad specialties and 61,600 tons to miscellaneous castings:

	Total		Railroad Specialties		Miscellaneous Castings	
Month	Net Tons	Per Cent of Capacity	Net Tons	Per Cent of Capacity	Net Tons	Per Cent of Capacity
1923						
January	102,718	102.0	48,580	124.2	54,138	87.9
February	90,590	90.0	38,696	99.0	51,894	84.2
March	146,157	145.1	77,263	197.6	68,894	111.8
April	93,621	93.0	40,483	103.5	53,138	86.3
May	92,445	91.8	39,686	101.5	52,759	85.6
June	88,306	87.7	43,478	111.2	44,828	72.8
July*	54,316	53.9	17,390	44.5	36,926	59.9
August	52,805	52.4	19,103	48.9	33,702	54.7
September	49,401	49.1	22,374	57.2	27,027	43.9
October	39,651	39.4	10,641	27.2	29,010	47.1
November	42,008	41.7	13,645	34.9	28,363	46.0
December	42,762	42.5	15,600	39.9	27,162	44.1
1924						
January	51,406	51.0	19,573	50.1	31,834	51.7
February	73,138	72.6	35,474	90.7	37,664	61.1
March	100,514	99.8	59,778	152.9	40,736	66.1
April**	65,670	65.2	33,121	84.7	32,549	52.8
May**	55,837	55.4	28,034	71.7	27,803	45.1

*Two companies with a capacity of 785 tons per month on miscellaneous castings now out of business.

**Reports for April were not received from 3 companies, with a capacity of 2247 tons, and in May from 2 companies with a capacity of 2130 tons.

Summer Training Course for Foremen

A special summer course for the training of foremen as conference leaders, so-called, to render foremen capable of transmitting to the employees the personnel policies of the management, will be given at the Oswego Normal School, Oswego, N. Y., for the six weeks beginning June 30, by the University of the State of New York. The course is open to representatives sent by industrial concerns and the men who take the course are expected to return to their plants equipped to conduct foremen training conferences. The course is free to residents of the State of New York. There will be sessions in the morning and afternoon of five days of each week. For particulars one should address L. A. Wilson, director of the division of vocational and extension education, State Department of Education, Albany.

United Alloy Steel Corporation, Canton, Ohio, has moved its Chicago office to 1440 Straus Building. L. K. Townsend is district sales manager.

Plans of New Companies

The Griffin Double Tread Wheel Co., 27 William Street, New York, recently incorporated with $250,000 capital stock, is considering the construction of a foundry and car wheel works at Wilkes-Barre, Pa. Its principal product will be a double-tread wheel to be used on motor trucks, either for travel on highways or on a standard gage railroad. E. H. Griffin, president Griffin Chilled Steel & Iron Co., Ltd., is also president of the new company.

The Emerick Liquid Container Co., New York, recently mentioned in this column, is to manufacture machinery for making liquid containers of other material than metal. The company has a temporary plant at Kalamazoo, Mich., where one of the incorporators, C. Emerick, is located. Jacques K. Baer, 63 West Thirty-eighth Street, New York, will be one of the officers of the company.

The Newark Sugar Refining Co., 765 Broad Street, Newark, N. J., organized with $5,000,000 capital stock, plans to construct a refining plant at Port Newark. Negotiations are in process for purchasing an eight-acre plot from the city. The plant will include power house and machine shop and is estimated to cost $1,500,000. Adolph Segal of Philadelphia is one of the heads.

The Buckley-Maslin Machine Co., New York, has been organized to operate a repair works and has acquired the business of the P. J. Durham Co., 244 West Forty-ninth Street, specialist in grinding work on cylinders. The new company will expand the plant to suit the enlarged business. J. S. Buckley and H. A. Maslin, formerly with the Durham company, are the principals.

The Electruck Corporation, 536 West Forty-sixth Street, New York, recently organized, will commence soon on the production of electrically operated commercial trucks in one- and three-ton capacities, with direct chain drive and double motor. Ralph D. Ward, formerly of Ward Baking Co., is president. The new company was formed to handle truck construction previously done by the Ward Baking Co., under his charge.

The Edison Gas Range Co., Inc., 201 West Forty-ninth Street, New York, has been incorporated with capital stock of $50,000 to manufacture gas ranges. The company is now seeking a connection with a foundry, for which this will be a permanent account.

The Pullman Mfg. Co., Rochester, N. Y., is a reorganization of a company by that name, which has increased its capital to $100,000 to provide for expansion. It is revamping the present plant and plans an aggressive campaign to enlarge all activities. J. L. Willard is president and treasurer.

The Capstaff-Hunter Turbine Works, Inc., 1118-20 Clinton Street, Hoboken, N. J., has been organized to design, manufacture and repair turbine engines and parts. It has taken over the shop of the Hunter Machine Works and has installed special equipment. James A. Capstaff, president, who formerly had charge of all turbine work for the W. & A. Fletcher Co., will supervise all work.

The Appleby Radio Co., 1134 South Cecil Street, Philadelphia, has been organized to manufacture a complete line of wireless instruments and accessories. It has leased a two-story brick factory building which will be adequate for some time. Thomas Appleby is general manager.

The Keystone Dairy Co., Parnassus, Pa., has been organized with $100,000 capital stock to manufacture brush washing machines. The plant is located at Arnold, Pa., and manufacturing is done under the style the Pioneer Brush Washing Machine Co. Materials used are motors, gray-iron castings, tub covers and wringers. Equipment is adequate for present needs. F. H. Alter is treasurer.

E. H. Cornell, long identified with the leather belting industry of the Middle West, has organized the American Leather Belting Co. and has begun operations in a new plant at 1455 West Congress Street, Chicago. The company is capitalized at $100,000, with Mr. Cornell as president and treasurer. A sales force is being organized which will handle distribution to large consumers and mill supply houses. All weights and grades of leather belting will be manufactured. Mr. Cornell was associated for several years with the Graton & Knight Mfg. Co., having had charge of the Chicago branch for two years. He left this company to organize the Cornell Belting Co., Chicago, and since disposing of his interest in the latter company, he has been making plans for the new enterprise.

The Patterson Sales Engineering Service will be organized after July 1 by J. B. Patterson, who for eight years has been district manager of the P. H. & F. M. Roots Co., Connersville, Ind. Mr. Patterson is retiring as president of the Engineering Advertisers Association, Chicago, and as director of the National Industrial Advertisers Association. Names of companies represented will be announced later. Temporary address is 901 Hearst Building, Chicago.

The Vacuum Display Fixture Corporation, Tulsa, Okla., has been organized to manufacture display fixtures. Temporary address is in care of Allen K. Swann, 846 Kennedy Building.

The Refrigerating Development Co. has been organized with $100,000 capital stock to manufacture refrigerating machines for household and industrial use. Manufacturing will be done by contract in lots of 500 to 1000. Bids for the work are now being received. The company will maintain an assembling plant. M. F. Jurick, 14 North Tenth Street, Allentown, Pa., heads the company.

The Lima Hardware Co., 137-39 South Main Street, Lima, Ohio, has been organized with $50,000 capital stock, has taken over the Jones Branson business, Lima, and will do a wholesale mill supply and retail hardware business. Richard T. Jones heads the company.

The Service Caster & Truck Co., Albion, Mich., recently incorporated with $300,000 capital stock, will manufacture ball bearing casters. It has built a plant at Albion and is in operation.

Kellin & Co., 85 Ellicott Street, Buffalo, has been organized with $20,000 capital stock to operate a general repair plant. It will repair tools, locks, etc., and do light welding. J. D. Hatch is secretary.

The Manufactured Products Corporation, St. Louis, has been organized with $150,000 capital stock to manufacture automobile accessories. It will confine its present activities to the manufacture of manifolds. Work will likely be done by contract. Temporary address is in care of O. M. Hill, Chemical Building.

The Morrison-Flockhardt Foundry Corporation, 216 Rome Street, Newark, N. J., recently was organized to operate a foundry business.

The Boonton Radio Corporation, Boonton, N. J., has been organized with 1000 shares of stock, no par value, to manufacture radio apparatus and equipment. For the present manufacturing will be done by contract through an allied company. B. E. Holley is one of the principals.

The Watervliet Iron & Brass Foundry, Inc., Elm Street and Cohoes Road, Watervliet, N. Y., was recently incorporated and has taken over the Troy Brass Foundry. Richard Sees, formerly head of the Troy company, will have charge of the brass department in the new concern, which is erecting a building and installing additional equipment for the manufacture of gray iron castings. The business will be operated as a jobbing foundry. A. W. Meyer, is president; John C. Rohleder, vice-president, and Richard Sees, treasurer.

The Easy Washing Machine Sales Co., Schenectady, N. Y., recently was incorporated to act as distributor for the products of the Syracuse Washing Machine Corporation, Syracuse, N. Y. G. C. Wilkinson is vice-president of the latter company.

The Pullman Car Mfg. Corporation has been organized with capital stock of $50,000,000 as the result of a plan by the Pullman Co. to segregate its manufacturing properties. The new company has taken over the plants at Pullman, Ill., and Michigan City, Ind., and is now in operation. Officers are: D. A. Crawford, president and treasurer; Clive Runnells, vice-president; C. A. Liddle, vice-president, W. N. Oehm, manager of works, and S. W. Gehr, secretary, all of whom were connected formerly with the manufacturing department of the Pullman Co.

The Detroit Pump Co., Fort Worth, Tex., has been organized with $150,000 capital stock to manufacture combination oil and water pumps for automobiles and trucks. All work will be done by contract and the company plans to let the work very soon. E. H. Carter is vice-president and treasurer.

The Dunning Compressor Co., Philadelphia, has been organized with $55,000 capital stock to manufacture air compressors. George Sachsenmaier of the George Sachsenmaier Co., 926 North Third Street, Philadelphia, is president of the new company, and Elmer D. Dunning, vice-president.

The Metal Products Co., Inc., is a new concern, incorporated at West Haven, Conn., to make and deal in machinery, tools, etc. It is capitalized at $100,000 and the incorporators are: Peter J. Oths, Sound View Avenue, East Haven, Conn.; Henry Braun, New Haven, Conn.; Arthur Steiler, 304 Winthrop Avenue, New Haven; Harry J. Post, New Haven.

The Trumble-Northrop Co. has been incorporated to make and deal in generating engines and other machinery. The new firm will be situated at Farmington, Conn., and is capitalized at $50,000. The incorporators are H. E. Trumble, 11 Harper Street, H. G. Trumble, G. A. Northrop and Jeannette Northrop, all of West Hartford, Conn.

STEEL AND INDUSTRIAL STOCKS

The range of prices on active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

	Low	High		Low	High
Allis-Chalmers ..	47½	49⅛	Int. Har.....	86½	86¾
Allis-Chal. pf. ..	93	94½	Int. Har. pf.....	108	108⅝
Am. B. S. & Fdy.	83⅝	83¾	Lima Loco.....	59	60
Am. B. S. & F. pf.	108½	108½	Midvale Steel....	71½	72
American Can....	108⅜	110¾	Nat. En. & Stm..	23½	26¾
Am Can pf.....	113⅝	114¼	N. Y. Air Brake..	42	45
Am. Car & Fdy..	160	161⅝	Otis Steel.....	7⅜	7½
Am. C. & F. pf..	123¼	123¼	Otis Steel pf.....	50	50¼
American Loco...	73	74	Pressed Stl. Car.	46⅜	48⅜
Am. Loco. pf....	118	118¼	Pressed Stl. pf...	80⅝	80⅝
Am. Radiator....	101⅞	104¼	Replogle Steel...	7½	8
Am. Stl. Fdries..	34⅞	35½	Republic	44⅜	45¾
Baldwin Loco....	110⅝	113⅝	Republic pf.....	82	83½
Baldwin Loco. pf.	114	114	Sloss-Sheffield ..	54½	55½
Bethlehem Steel..	45⅜	47⅞	Steel of Canada..	71	72
Beth. Stl. 7% pf.	90⅞	92	Transue-Wms. ..	28	28
Beth. Stl. 8% pf.	104½	104½	Un. Alloy Steel..	21⅛	22½
Colo. Fuel.....	41¾	46¾	U. S. Pipe.....	93	97⅜
Crucible Steel....	51¼	52⅜	U. S. Pipe pf....	92	92½
Crucible Stl. pf..	88	88½	U. S. Steel.....	96⅜	97⅜
Deere pf.....	62	62	U. S. Steel pf....	120½	122½
Gen. Electric.....	229½	236¾	Vanadium Steel..	21¼	22
Gt. No. Ore Cert.	26⅝	27	Va. I. C. & Coke.	38	38
Gulf States Steel	66¼	68½	W'house Air Br.	93½	94
Inland Steel.....	32½	33⅜	Y'town S. & T...	64	64

Industrial Finances

An application for filing a petition including an offer on the property of the Anderson Foundry & Machine Co., Anderson, Ind., subsidiary of the R. L. Dollings Co. of Indiana, now in the hands of the receiver, has been filed in the Madison County Circuit Court by a committee of stockholders and creditors. The offer includes $250,000 and an agreement to pay all outstanding claims. Another plan said to be under consideration by the committee would mean a reorganization of the company with an issue of $600,000 preferred stock and $800,000 common, and a bond issue of not to exceed $350,000. Winfield T. Durbin is receiver for the company. The property was capitalized at $1,250,000 when it was taken over by the Dollings company and virtually that amount of stock was sold.

The A. H. Petersen Mfg. Co., 1614 Fratney Street, Milwaukee, manufacturer of electric drills and other motor-driven tools, has been made defendant in involuntary bankruptcy proceedings instituted on behalf of nearly 200 creditors. The plant, erected three years ago, was almost totally destroyed by fire in April, following a smaller loss in December. Assets are estimated at $309,353 and liabilities at $184,634.

The report of the Reed-Prentice Co., Worcester, Mass., maker of machine tools, for 1923 shows a deficit of $167,127, which compares with one of $207,138 in 1922. Due to severe competition in the machine tool industry, the company was unable to utilize its full plant capacity. In consequence there has accrued a dividend arrearage on the preferred stock capitalization of 21 per cent. The balance sheet shows total assets and liabilities of $2,509,026, against $2,417,977 at the close of 1922, and $2,270,407 for 1921. Of the assets, the company on Dec. 31 had cash and accounts receivable aggregating $290,895, against $170,717 at the close of 1922; inventories of $1,180,296, as against $1,228,937; investments of $4,797, as against $453. Accounts payable stood at $88,762, notes payable at $475,000.

Rolls-Royce of America, Springfield, Mass., maker of automobiles, is operating well within the rate of bookings. It has approximately $900,000 of business on its books, is producing seven to nine cars a week and employing 550 men. About 3000 man hours are required to produce a car.

Sale of the plant and equipment of the Barney & Smith Car Co., Dayton, Ohio, has been approved, the amount obtained being $437,307. The property was sold in parcels. Among the purchasers were the W. H. Kiefaber Co., W. S. Hawker, Thresher Varnish Co., Master Electric Co., all of Dayton, and the Louis E. Emerman Co., Chicago. The machinery of the plant was sold for $67,806.

Directors of the United Alloy Steel Corporation have passed the regular quarterly dividend of 50c. on common stock, due at this time. The regular dividend of 1¾ per cent was declared on preferred. In a statement issued after the directors' meeting it was declared that "largely decreased operations general in the steel industry" did not warrant the customary disbursement on common stock. Enlargements and improvements in plant have been made in order to increase production at reduced costs. It also appeared in the statement that the company had more than three to one of liquid assets to current liabilities, but in view of the uncertain business outlook "directors deem it conservative and wise to keep the company in such splendid liquid condition."

Net profits of the Transue & Williams Steel Forging Corporation for the five months ended May 31 were approximately $110,000, after all charges and taxes.

Trade Changes

The Ziv Steel & Wire Co., 4413-4423 West Kinzie Street, Chicago, has been appointed district representative of the Braeburn Alloy Steel Corporation, Braeburn, Pa. The Braeburn mill has been reorganized under the management of experienced tool steel experts and is ready to supply manufacturers with tool steels.

The Wagner Electric Corporation has moved its Philadelphia office and service station to 1720-26 Callowhill Street. Elmer Lingard is in charge.

The Charles T. Topping Machinery Co., manufacturer of the Topping pony ditcher, announces the removal of headquarters from Pittsburgh to Dayton, Ohio, P. O. Box 842. Officers will be located at the plant of the Smith Gas Engineering Co., Moraine City, Dayton, where the ditcher is manufactured.

The American Sintering Co., American Ore Reclamation Co. and Buffalo Sintering Corporation moved their offices on June 16 from 86 East Randolph Street, Chicago, to Room 1108, Strauss Building, 310 South Michigan Avenue, Chicago.

The Industrial Works, Bay City, Mich., announce the appointment of Ridenour, Seaver & Kendig, 773 Ellicott Square, Buffalo, as representatives in the Buffalo district.

Perin, Marshall & Estep, consulting engineers, have moved to the American Radiator Building, 40 West Fortieth Street, New York.

Work will begin July 1 at the Standard Sanitary Mfg. Co.'s plant in Baltimore for manufacturing plumbing fixtures. In the first unit 1500 workers will be employed and when all units are in operation it is estimated that 3000 will be given work. The $4,000,000 enterprise covers 50 acres and is one of the largest projects to have been developed in Baltimore in recent years.

Seeks to Have Taxes Reduced

BUFFALO, June 24.—Supreme Court Justice Pierce has reserved decision on the application of the Donner-Hanna Coke Corporaton for an order directing the board of assessors to divide the assessment of its plant for 1923 so that it will have to pay taxes on only $147,200 instead of $3,575,560. The fight waged in the courts between the city and the corporation over the assessment of the plant resulted in a decision declaring the improvements on the land owned by the corporation belonged to the United States and therefore could not be taxed by the city. As a result of this decision, the corporation had the assessment divided in 1921, 1922 and 1924, but failed to have it done for 1923.

Attorney Herbert A. Hickman, corporation counsel's office, opposed the application of Attorney John Lord O'Brian of counsel for the corporation for an order, contending that the applicant had failed to act in time and therefore should be compelled to pay taxes on the entire assessment.

New Trade Publications

Steel Castings.—Taylor-Wharton Iron & Steel Co., High Bridge, N. J. Booklet entitled "Putting the Right Steel on the Job." Describes with illustrations the various products from this company's three plants.

Molding Machinery.—Hanna Engineering Works, Chicago. Leaflet illustrating and describing the Mumford unbalanced vibrator.

Air Filters.—Midwest Air Filters, Inc., 100 East Forty-fifth Street, New York. Twenty-four-page catalog devoted to the use of air filters for compressors and internal combustion engines. This is in the nature of a data book, with tables and diagrams, together with a discussion of the use of filters for air. Formulas are given for computing compressor capacities, and also friction losses in air ducts.

Boilers for Heating or Power.—Lebanon Boiler Works, Lebanon, Pa. Two-page folder featuring an L-O boiler, built under the Obert patents. A table of dimensions tying up with a diagram features boilers with steam radiation capacity from 1000 to 30,000 sq. ft. or hot water radiation from 1600 to 32,000 sq. ft.

Machinery Markets and News of the Works

LULL CONTINUES

Lehigh Valley Getting Prices—Small List Issued by Burlington

Cleveland Waterworks Department in Market—Other Business in Prospect

With the exception of Cincinnati, where some fair sized orders were placed, a quiet week has been experienced, both as to sales and inquiries.

The Lehigh Valley Railroad is getting prices on several tools, including radial drills, crank planers, engine lathes, a vertical boring mill, a draw-cut shaper and a flanging machine.

A list of five items including grinding machines, a flat turret lathe, a band saw and a combination resaw and scroll has been issued by the Chicago, Burlington & Quincy Railroad for its subsidiary, the Fort Worth & Denver City.

Railroad buying expected during the coming week includes purchases by the Norfolk & Western and the Santa Fe.

The waterworks department of the city of Cleveland is in the market for approximately a dozen machine tools.

Equipment in prospect for plant additions includes that required by the Parkersburg Machine Co., Parkersburg, W. Va., and the Continental Gin Co., Birmingham, the purchase of which probably will be made by the companies named. A Detroit automobile plant is reported to be figuring on additional equipment aggregating about $75,000.

Action is expected during the coming week on the list of the Dayton, Ohio, Board of Education, which includes 16 woodworking machines and 30 metal working tools. The list of the Chicago Board of Education, which if bought in its entirety will involve a total of more than $100,000, is a center of interest. It is expected that the distribution of orders will be announced July 9.

Additional inquiries have been sent out by the General Electric Co. and Mitsui & Co., for the Japanese General Electric Co.'s plant, the tools on these lists now numbering several hundred.

The Cadillac Motor Car Co. is reported to have placed a large order for multiple spindle drills. The American Bridge Co. purchased eight radial drilling machines, the Inland Steel Co. several tools, and a Kansas City manufacturer 11 engine lathes.

A purchase of note, reported from Cincinnati and upon which details are not given, was of approximately 75 used tools by a Western railroad. Orders for two lathes and one radial drill were received from Cuba.

New York

NEW YORK, June 24.

NOTHING of an encouraging character has developed in the local machine-tool trade except sending out additional inquiries by the General Electric Co. and Mitsui & Co. for the Japanese General Electric Co.'s plant. These lists now aggregate several hundred tools. Business generally is very quiet, the machine-tool trade having reached the lowest state of business in its line since 1921. Railroad buying the past week has not been important, probably because most of the purchasing and executive officials of the railroads were attending the railroad conventions at Atlantic City. The Lehigh Valley Railroad is getting prices on about a dozen machines. The S K F Industries, Inc., has bought a side-head boring mill.

The Lehigh Valley Railroad inquiry, above mentioned, is as follows:

One 36-in.—42-in. vertical boring mill.
Three 3-ft. radial drills.
Two 34-in. Newton crank shapers.
One 40-in. Newton crank shaper.
Two 20-in. x 8-ft. engine lathes.
One 32-in. Newton crank planer.
Two 16-in. x 6-ft. engine lathes.
One 36-in. draw-cut shaper.
One McCabe pneumatic flanging machine.

The Weatherell Motor Cycle & Car Co., 18 Savoy Street, Strand, London, England, has been organized with $1,000,000 capital stock, Delaware laws, to manufacture motorcycles on a plan of mass production. Machines will be built in this country as well as in England, manufacturing here to be done by contract, for which bids soon will be taken. Reginald Weatherell is president. The American address is 19 Dover Green, Dover, Del.

Thomas Roberts, Jr., Room 932, 30 Broad Street, New York, is inquiring for six to nine pairs of 12-in. used mill housings for a strip or bar mill. Either three-high or two-high will be suitable. They may be of cast iron or steel, but half must be with closed tops. Accompanying. pinions, spindles, couplings, bed plates and equipment also are needed.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until July 8 for a quantity of seamless steel boiler tubes for the South Brooklyn and Mare Island navy yards, schedule 2360; also for 8 electric air heaters for both yards, schedule 2350.

The City Corrugated Paper Products Co., 214 East Twenty-second Street, New York, has authorized its architect, J. Dorfman, same address, to prepare plans for extensions and improvements in the four-story and basement building recently leased at 622-40 West Fifty-seventh Street.

E. C. Sherwood, 50 Church Street, New York, dealer in railroad contracting equipment, is in the market for a steam-driven air compressor, with piston valves and automatic cut-off, duplex type, about 1200 cu. ft. displacement, with boiler and accessory apparatus.

The Ford Motor Co., Highland Park, Detroit, has plans for a one-story addition to its tractor manufacturing plant at Green Island, N. Y., 200 x 1200 ft., estimated to cost $1,000,000 with equipment. Albert Kahn, 1000 Marquette Building, Detroit, is architect.

Electric motors, conveying machinery, tanks and mixing equipment will be installed in the four-story plant, 100 x 100 ft., to be erected by the United Sanitary Products Co., 65 Fifth Avenue, New York, manufacturer of liquid soaps, etc., at Buckley Street and Foster Avenue, Brooklyn, estimated to cost $160,000. Plans are being drawn by B. Dreisler, 153 Remsen Street, Brooklyn, architect. Benjamin Newman is president.

The Bureau of Foreign and Domestic Commerce, 730 Custom House, New York, has information regarding a company at South Africa which plans the purchase of American refrigerating and ice-making machinery. An official of the company will soon visit the United States with view to making purchases.

The Quality Laundry Service, Inc., 251 Third Avenue, New York, plans for the construction of a one-story steam power plant at its proposed plant at the Southern Boulevard and 134th Street, estimated to cost $500,000 with machinery.

Stern & Peyser, Proctor Building, Mount Vernon, N. Y., architects, are preparing plans for a two-story automobile

The Crane Market

THE market on electric overhead traveling cranes is still quite active with a fair volume of pending business and a fairly satisfactory number of awards. Although pending inquiries in the locomotive crane field are fairly numerous, but little business is noted. No action is as yet reported on the inquiry of the New York Central Railroad for a locomotive crane and the two locomotive cranes for the Western Electric Co. plant at Kearny, N. J., seem to have been temporarily postponed. There is some prospect of action, however, on the inquiry of the Canton Railroad Co., Baltimore, Md., for a locomotive crane. Several inquiries that have been in the market from contractors have apparently been abandoned as a result of failure of the contractor to obtain the work for which the crane was to have been used. Among current overhead crane inquiries is one from the Lehigh Valley Railroad, 143 Liberty Street, New York, for a 30-ton gantry crane; American Cyanamid Co., 25 West Forty-third Street, New York, a bucket crane; Erie Railroad, 30 Church Street, New York, a 5-ton, hand power crane. Among other inquiries still pending is the 25-ton electric crane asked for by the New York Transit Corporation, and a 15-ton electric crane asked for by the Brooklyn-Manhattan Transit Co., both of 85 Clinton Street, Brooklyn, N. Y.; 11 overhead cranes from 5-tons to 25-tons capacity inquired for by the Bethlehem Steel Corporation for Sparrows Point, Md.; two gantry cranes for the Pennsylvania Railroad, Philadelphia; and several cranes to be bought by the Foundation Co., New York for a contract with the Southern Railway Co. in Knoxville, Tenn. The Continental Gin Co., Birmingham, will require two 15-ton and two 10-ton electric cranes and ten or twelve 1-ton hand power cranes for a new foundry and machine shop.

Among recent purchases are:

New York Central & Hudson River Railroad, New York, a 10-ton, 85-ft. span gantry crane from the Cleveland Crane & Engineering Co.

United States Metals & Refining Co., Chrome, N. J., a 7-ton, 92-ft. 6-in. span, 4-motor, cage control, grab bucket crane with 2-cu. yd. bucket, from the Shepard Electric Crane & Hoist Co.

Alloy Metal Wire Co., Moore, Pa., a 3-ton, 22-ft. 6-in. span, 3-motor underhung traveling crane, from Alfred Box & Co.

Stone & Webster, Boston, reported to have purchased the grab-bucket crane for the Indiana Electric & Mfg. Co., Macksville, Ind., from the Whiting Corporation.

Chicago, Burlington & Quincy Railroad Co., Chicago, a 10-ton electric traveling crane from the Whiting Corporation.

Youngstown Sheet & Tube Co., Youngstown, a 5-ton hand power crane from a Mid-Western builder.

Abbott, Merkt & Co., 175 Fifth Avenue, New York, a 3-ton, 35-ft. 3-in. span, 4-motor bucket handling crane to handle ½-cu. yd. bucket from the Milwaukee Electric & Mfg. Co.

Czarnikow Rionda, 110 Wall Street, New York, a 35-ton locomotive crane from the Industrial Works.

Levering Brothers, Brooklyn, N. Y., foundry, two 1-ton single I-beam cranes from the Chisholm-Moore Mfg. Co.

Supply Officer, Navy Purchasing Bureau, New York, 25 small capacity hand power hoists for fleet supply base, Brooklyn, N. Y., from the Chisholm-Moore Mfg. Co.

West Leechburg Steel Co., West Leechburg, Pa., a 5-ton electric traveling crane from the Northern Engineering Works.

C. O. Bartlett & Snow, Cleveland, a 5-ton and a 10-ton electric traveling cranes from the Northern Engineering Works.

City of Lansing, Mich., electric light and water department, a hand-power traveling crane from the Northern Engineering Works.

service, repair and garage building, 75 x 100 ft., to cost about $55,000 with equipment.

Consul Homer Brett, Bahia, Brazil, has information regarding a company at Jequie, State of Bahia, which has purchased water rights near the city and contemplates the construction of a hydroelectric generating plant, on which work will start during the year. The Bureau of Foreign and Domestic Commerce, Washington, has data regarding the project, Reference No. 132700.

The Brooklyn Union Gas Co., 176 Remsen Street, Brooklyn, has plans under way for a two-story storage and distributing plant at 54 Sixty-fifth Street, estimated to cost $350,000 with equipment, including coal-handling machinery.

John J. Collins, borough clerk, Park Ridge, N. J., will receive bids until July 7 for pumping machinery for the municipal water plant. H. J. Harder, 129 Market Street, Paterson, N. J., is engineer.

Manual training equipment will be installed in the two-story and basement high school to be erected at Union, N. J., estimated to cost $180,000, for which foundations will soon be laid. Frederick A. Elfasser, 855 Broad Street, Newark, N. J., is architect.

The Public Service Electric Co., Public Service Terminal, Newark, N. J., will soon begin superstructure work on a portion of its new generating station at Kearny, N. J., the entire plant to cost in excess of $5,000,000 with machinery.

The Standard Oil Co. of New Jersey, 26 Broadway, New York, will build a new pier with unloading and conveying machinery at Constable Hook, Bayonne, N. J., estimated to cost $485,000 including bulkhead.

The Barozzi Dryer Machine Co., Hoboken, N. J., care of J. I. Kislak, Inc., 34 Newark Street, Hoboken, real estate, has acquired property, 115 x 145 ft., at Eighth and Jackson Streets, and will have plans drawn for a two-story plant.

The Brightson Laboratories, Inc., Newark, recently organized, has leased the entire three-story building at 73 Winthrop Street, totaling about 10,000 sq. ft., and will install precision and other machinery for the manufacture of wireless equipment and supplies. George E. Brighton is president.

Osterweil Brothers, Inc., 750 Frelinghuysen Avenue, Newark, manufacturer of metal-bound trunks, has leased space in the building at 179-189 Chestnut Street, totaling 20,000 sq. ft., and will install equipment for a plant addition. The present works will be maintained. Sidney Osterweil is president.

The International Motor Co., Plainfield, N. J., manufacturer of motor trucks, is said to be contemplating erection of a new plant for the manufacture of motor buses, for which the board of directors has recently authorized an appropriation of about $3,500,000, for site, buildings and machinery.

The Board of Education, Bound Brook, N. J., contemplates the installation of manual training equipment in connection with an addition to the local Washington high school, estimated to cost $280,000, for which John N. Pierson & Son, Raritan Building, Perth Amboy, N. J., are architects.

The United States Metal Refining Co., Carteret, N. J., will soon begin the erection of an addition to cost $75,000 including equipment.

Philadelphia

PHILADELPHIA, June 23.

THE Philadelphia & Reading Railroad Co., Reading Terminal, Philadelphia, has plans for a new engine coaling station at Birdsboro, Pa., with unloading equipment, etc. Samuel T. Wagner is chief engineer.

The Gulf Refining Co., Widener Building, Philadelphia, has plans for a one-story addition to its storage and distributing works at Penrose Street and the Schuykill River, estimated to cost $60,000.

Fire, June 13, destroyed a portion of the plant of Lindsay, Hyde & Co., 2130 East York Street, Philadelphia, manufacturers of machinery and operating a general machine works, with loss estimated at $50,000 including equipment. It is planned to rebuild.

The Foreign Trade Bureau, Philadelphia Commercial Museum, Thirty-fourth Street, has received an inquiry from Aktiebolaget C. K. Hornsleth & Nissen, Brunkebergstrog 34, Stockholm, Sweden, interested in purchasing bolts, nuts, rivets, brass tubing, iron and steel sheets, tools and kindred products, No. 42374; also, a similar inquiry from Antonio Mendoza, S. en C., Republica 99, Camaguey, Cuba, for iron and steel bars, sheets, ingots and pipes, tin-plate, bolts, nuts, rivets, etc., No. 42383.

The Wayne Iron Works, Commercial Trust Building, Philadelphia, will erect a one-story plant, 50 x 75 ft., at St. Davids, Delaware County, estimated to cost $22,000. P. M. Sax, Penfield Building, is architect.

The United Gas Improvement Co., Broad and Arch Streets, Philadelphia, has acquired 21 acres on Richmond Street, extending to the Port Wardens line, Delaware River, heretofore held by the Philadelphia & Reading Railway Co., and contemplates using a portion of the site for a

storage and distributing plant, with installation of hoisting, conveying machinery, etc. The company is interested in a large electric power plant project being developed, providing for the construction of a hydroelectric generating station on the Ottawa River, Canada, and a steam-operated power plant in the Middle West, with estimated initial investment of $15,000,000.

George W. Crowley, Jr., F. E. Harshaw, and associates, Philadelphia, represented by James Collins Jones, Bullitt Building, have organized the Dudley Light & Power Co., and the Hydetown Light & Power Co., to install and operate plants and systems at Dudley, Huntingdon County, and Hydetown, Crawford County, and vicinity.

The Trenton Malleable Iron Co., New York Avenue, Trenton, N. J., has filed plans for a one-story addition, 70 x 120 ft., to cost about $40,000, for which a general contract has been awarded to Joseph P. Drugan, Trenton.

Lester Davis, 616 Spruce Street, Reading, Pa., architect, is preparing plans for a two and three-story automobile service, repair and garage building, 120 x 160 ft., on Adams Avenue, estimated to cost $250,000 with equipment. It will be owned by P. J. Casey, Hotel Casey, Adams Avenue.

Fire, June 19, destroyed a portion of the automobile body plant of W. A. Henry & Son, York, Pa., with loss estimated at $20,000 including equipment. Plans for rebuilding are under consideration.

The Glen Alden Coal Co., Jefferson and Linden Streets, Scranton, Pa., will begin the erection of a new one-story coal washery, 50 x 78 ft., estimated to cost $42,000 with machinery. S. D. Dimmick is vice-president.

Carlton L. Hoff, York, Pa., is perfecting plans for the organization of a company to build and operate a local plant for the manufacture of a recently invented non-skid automobile chain. Special machinery will be installed for molding and assembling work.

The Bear Combustion Co., York, Pa., has been organized with capital stock of $50,000 to manufacture combustion apparatus. All material required to manufacture and assemble the machines will be purchased and assembling will be done by the York Electric & Machine Co., York. Charles H. Bear is president.

New England

BOSTON, June 23.

WITH the ratio of operation to plant capacity steadily widening, machine tool dealers in this territory find it increasingly difficult to interest the metal working industry in new equipment. It is doubtful if plants are operating on much more than 55 per cent of capacity. The textile machinery industry, one of the best mediums for machine tool sales, has been especially hard hit, due to the depression in the cotton textile field. A falling off in the demand for repair parts and small tools also is noted. In comparison with machine tools, however, the small tool market is active.

The Draper Corporation, Hopedale, Mass., which has been fairly busy, has just placed its shuttle, bobbin, ring, spindle and spindle blade departments on a four-day per week schedule. The company is reported as having not much more than enough unfilled business on its books to carry it over into July, and practically no new business is available. Other textile machinery makers have materially reduced operating forces and time. The General Electric Co., West Lynn, and the United Shoe Machinery Co., Beverly, Mass., are perhaps the two brightest industrial spots in New England, but these firms are not interested in machine tools at present.

Bids have closed on three lathes, size not specified, for submarine work, for the Portsmouth Navy Yard. There were seven bids, with prices ranging from $7,852 to $14,000. Award has not been made. The Boston school commission has closed with Joseph Beal & Co., Boston, for lathes for a Brighton district school. A 21-in. drill and a 16-in. lathe, taken by a New Hampshire shop, represents the largest individual sale of used equipment the past week.

The Lux Clock Mfg. Co., Waterbury, Conn., plans the immediate erection of a one-story 25 x 102 ft. addition.

Permit has been granted Landers, Frary & Clark, New Britain, Conn., cutlery, etc., to construct a five-story 50 x 130 ft. addition to cost $23,000.

Bids closed June 26 for a two-story and basement 85 x 134 ft. trade school at South Manchester, Conn., to cost $85,000. C. R. Hathaway is secretary of the school commission and Laberge H. Geer, Manchester, is engineer.

The Draper Corporation, Hopedale, Mass., textile machinery, is taking bids on a proposed power house, air compressor unit and other additions and alterations. F. F. Butterworth is manager in charge. John A. Stevens, 8 Merrimack Street, Lowell, is the engineer.

Bids have closed on a fire department repair shop addition to cost $15,000, contemplated by New Bedford, Mass. Napoleon Ricard is chairman of the city property commission, Municipal Building, New Bedford. Chase, Pierce & Cox, South and Union Streets, New Bedford, are the architects.

The E. T. Ryan Iron Works, Inc., Allston Station, Boston, is in the market for 150 pieces of galvanized iron or steel pipe, 5-ft. length, in each of the following sizes: 2½-in., 3-in. and 3½-in.; also 150 pieces of 3½-in. galvanized iron or steel pipe, 5 ft. 6 in. in length.

The Strand & Sweet Mfg. Co., Winsted, Conn., manufacturer of magnet wire and other electrical wires, will build an addition to cost $30,000. W. E. Hunt, Torrington, Conn., is architect.

The Westinghouse Electric & Mfg. Co., Page Boulevard, Springfield, Mass., has awarded a general contract to the E. F. Carlson Co., Springfield, for a one-story addition to cost about $42,500.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until July 1 for two motor-generator sets and spare parts for the Fore River Navy Yard, schedule 2328.

The Plume & Atwood Mfg. Co., Waterbury, Conn., manufacturer of brass goods and fixtures, is taking bids on revised plans for a four-story addition, totaling 25,500 sq. ft. Westcott & Mapes, Inc., New Haven, Conn., is architect and engineer.

The Bryan Wet Wash Laundry, 88 Boylston Street, Jamaica Plain, Boston, has plans for a one-story addition to its steam power house, 50 x 50 ft. A. O. Bottomley, 61 Court Street, Boston, is architect.

Henry C. Brookings and associates, care of Haven & Hopkins, 11 Beacon Street, Boston, architects, have plans for an eight-story automobile service, repair and garage building, 120 x 150 ft., on Beach Street, to cost $300,000 with equipment.

Chicago

CHICAGO, June 23.

INTEREST is centered in the Chicago Board of Education list which, if bought in its entirety, will involve a total of more than $100,000. Definite recommendations have been made by the purchasing committee, but the distribution of orders will not be announced until the meeting of the Board of Education on July 9. Railroad buying is slow in developing. For its Galesburg, Ill., steel car shop, the Chicago, Burlington & Quincy has placed orders for three punches and shears, one multiple punch, one bulldozer, one bending brake, and one power hammer. The Burlington has also issued a small list for its subsidiary, the Fort Worth & Denver City. Further action on the extensive Santa Fe list has been postponed for another week. Orders and inquiries from industrial buyers have been few and far between. The Milwaukee Electric Railway & Light Co., however, has placed an order for a 48 x 60-in. x 14-ft. planer with four heads on the cross rail, arranged for reversing motor drive.

Chicago, Burlington & Quincy
(For Fort Worth & Denver City R. R.)

Two Ransom No. 21 dry grinders with motor and automatic control, the push-button station controller to be Industrial controller, Allen Bradley or equal.

One Oliver No. 15-R, or equivalent, motor-driven automatic push-button control combination resaw and scroll.

One 3 x 17 x 36-in. flat turret lathe, Jones & Lamson steel head motor-drive model, or equivalent.

One ball-bearing 36-in. motor-driven band saw, American No. 10 standard, or equivalent.

The Magill-Weinsheimer Co. has purchased the property at 1320-34 South Wabash Avenue, Chicago, known as the Coca-Cola Building, a part of which the company has occupied for its engraving, lithographing and printing business

since 1907. Requirements for additional space will be met by taking over immediately the first floor and basement of the building, and on May 1, 1925, also the second floor. This additional space will give the company a total area of 150,000 sq. ft.

The American Oven & Machine Co., with general offices in the Conway Building, Chicago, and a factory in Fulton Street, has purchased the northeast corner of California Avenue and Flournoy Street, 125 x 222 ft., on which will be erected offices and a factory after plans drawn by Richard Griesser, 64 West Randolph Street.

The American Envelope Co., represented by G. H. Steinson, secretary-treasurer, 817 West Washington Boulevard, Chicago, is taking bids through Holton, Seelye & Co., 140 South Dearborn Street, on a one-story mill construction factory on Grand Avenue, with 300 ft. frontage.

The Pines Winterfront Co., 410 North Sacramento Avenue, Chicago, has awarded a contract for a two-story factory addition, 125 x 130 ft., to cost $50,000.

L. Newton & Co., manufacturers of paper boxes, 527 South Jefferson Street, Chicago; have purchased a three-story building, 98 x 114 ft., at the corner of Fulton and Wood Streets which it will occupy.

The Kewanee Mfg. Co., manufacturer of coal chutes, Kewanee, Ill., is erecting an addition, 64 x 110 ft. The manufacturing equipment will be moved into the new building and the present structure will be used exclusively for office and warehouse purposes.

The Charter Gas Engine Co., Sterling, Ill., is having plans prepared by Frank D. Chase, Inc., engineer and architect, 720 North Michigan Avenue, Chicago, for a new gas engine plant, including machine shop, foundry and warehouse buildings.

The Moore Speedcrane, Inc., 39 South La Salle Street, Chicago, recently incorporated with capital stock of $150,000 preferred and 6000 shares of no par common, has been manufacturing cranes by contract, but plans to obtain a plant or build and to do its own manufacturing in the near future. C. H. Moore heads the company.

The Nebraska Power Co., Omaha, Neb., is disposing of a bond issue of $1,000,000, a portion of the proceeds to be used for extensions in power plants and system.

The Electric Machinery Mfg. Co., 1331 Tyler Street, N. E., Minneapolis, Minn., has awarded a general contract for a two-story and basement addition to R. J. Kvalheim, 2631 Central Avenue, 135 x 184 ft., to cost $75,000 including equipment. Foundations will be laid at once.

The Great Northern Railway Co., Fifth and Jackson Streets, St. Paul, Minn., has awarded a general contract to L. T. Stromseold, Minot, N. D., for a one-story engine house at Minot, with repair shop facilities. Contract has also been let to James Drury, Grand Forks, N. D., for a similar engine house at Williston, N. D.

The Apollo Metal Works, Inc., La Salle, Ill., is breaking ground for an addition at Zinc Street and Porter Avenue, designed to more than double the present capacity. It will cost $75,000. The company specializes in the production of coppered and brass-finished sheets, nickeled specialties, etc.

Electric power equipment, control devices, conveying machinery and other equipment will be installed in the new printing plant to be erected by the Illinois State Journal Co., 313 South Sixth Street, Springfield, Ill., estimated to cost $210,000, for which preliminary plans are being drawn.

The Common Council, Hinsdale, Ill., is having plans drawn for a water-softening plant at the municipal waterworks and expects to ask for bids at an early date. Frank B. Danielson is engineer.

The Wisconsin Railway, Light & Power Co., Winona, Minn., will soon ask bids on a general contract for a one-story addition to its steam-operated electric generating plant to cost about $160,000. Mead & Seastone, Journal Building, Madison, Wis., are engineers. R. M. Howard is manager.

Detroit

DETROIT, June 23.

CONTRACT has been awarded by the De Croupet Iron Works, 1369 Monroe Avenue, Detroit, to Walter F. Linden, local, for a one-story addition estimated to cost $32,000.

Albert Grauer & Co., 648 East Columbia Street, Detroit, manufacturers of skylights, vault lights, etc., will concentrate operations at 1408-24 Seventeenth Street, where additional equipment will be provided for considerable increase in outupt.

Manual training equipment will be installed in the three-story senior high school to be erected at Muskegon, Mich., estimated to cost $700,000, for which plans are being drawn. William B. Ittner, 911 Locust Street, St. Louis, is consulting architect; H. H. Turner, Michigan Trust Building, Grand Rapids, Mich., is architect, and W. W. Bradfield, last noted address, mechanical engineer.

The Manistique & Lake Superior Railroad Co., Manistique, Mich., has tentative plans for rebuilding the portion of its machine shops destroyed by fire June 14 with loss reported at $25,000 including equipment.

Electric power equipment, steam apparatus, conveying and other machinery will be installed in the three-story plant, 85 x 550 ft., to be erected at Owosso, Mich., by the A. R. Walker Candy Corporation, 58 Morris Avenue, Muskegon, Mich., estimated to cost $210,000. Adolph R. Walker is president.

The Pere Marquette Railroad Co., Detroit, is arranging an appropriation of $6,130,000 for extensions and improvements during the fiscal year, to include additions to locomotive and car shops, with additional equipment.

The Detroit Gray Iron Foundry Co., 6403 Wight Street, Detroit, has plans for a two-story and basement addition, 50 x 82 ft., estimated to cost $42,000 with equipment. Mildner & Eisen, Hammond Building, are architects.

The Grand Trunk Railway Co., Battle Creek, Mich., will begin the construction of its engine terminal and shops, consisting of engine house, machine shops, power plant, stores building and other structures, estimated to cost $600,000 with equipment.

The Calumet & Hecla Consolidated Copper Co., Calumet, Mich., contemplates the installation of electric power hoisting equipment at one of its shafts, replacing present steam-driven apparatus.

The city of Lansing, Mich., has awarded a contract for the construction of repair shops and a warehouse for the electric light and water departments to cost $115,000.

The Universal Skidless Machine Co., Niles, Mich., is constructing a new plant, 60 x 100 ft.

Cincinnati

CINCINNATI, June 23.

SOME fair-sized orders were placed with machine tool manufacturers in this district the past week or two. The American Bridge Co. purchased eight radial drilling machines, the H. T. Porter Co., Pittsburgh, three radial drilling machines, the Navy Department three engine lathes, the Inland Steel Co. several tools, including a large boring mill, and a Kansas City manufacturer 11 engine lathes. In addition, the Cadillac Motor Car Co. is reported to have placed the largest order for multiple spindle drilling machines on record. The Dayton, Ohio, Board of Education is expected to close on its list this week. Equipment has been purchased for the manual training school at Greenfield, Ohio.

A purchase of note, recently completed, was for approximately 75 used tools by a Western railroad. A local manufacturer reports orders for two lathes and one radial drill from Cuba. Railroad buying is expected this week, particularly by the Norfolk & Western and the Santa Fe. The Louisville & Nashville has purchased a boring mill and a heavy duty planer. Dealers report fair activity in this territory and used machinery dealers are also having a fair volume of business.

The Auto-Way Indicator Co., Marietta, Ohio, has been incorporated to manufacture an automobile signaling device. It has obtained a plant and equipment has been purchased. H. W. Spung is general manager.

French & Hecht, Springfield, Ohio, manufacturers of water wheels, are erecting an addition to the plant but no equipment will be required.

Laundry machinery will be installed in a new building to be erected at the State Oddfellows' Home at Springfield, Ohio, plans for which have been authorized. The building with equipment will cost $35,000.

The Ford Motor Co., Hamilton, Ohio, is erecting a forging shop where it is proposed to make all forgings used at the plant in the manufacture of wheels. Equipment has not yet been purchased.

The Southern Cities Power Co., Chattanooga, Tenn., has awarded a general contract to Foster & Creighton, Nashville, Tenn., for a power plant and power dam on the Columbia River, near Columbia, Tenn., to be equipped for a hydro-electric generating station, estimated to cost $200,000 with machinery. Freeland, Roberts & Co., Nashville, are engineers.

The Lunkenheimer Co., Waverly Avenue, Cincinnati, manufacturer of valves, steam specialties, etc., has filed plans for a one-story machine shop, estimated to cost $200,000 with machinery. Harry Hake, Cincinnati, is architect.

The Kentucky Hydro-Electric Co., Louisville, is disposing of a bond issue of $4,000,000, a portion of the proceeds to be used for expansion, including the completion of a new hydroelectric power station on the Dix River. The company is operated by the Middle West Utilities Co., 72 West Adams Street, Chicago. Martin Insull is president of the Kentucky company.

The Hays Lumber Co., Whitesburg, Ky., plans for the erection of a new one-story mill, to cost $45,000 with equipment. It is purposed to install electrically-operated equipment.

The Davidson County Board of Education, Nashville, Tenn., will soon break ground for a one-story manual training building at the central high school to cost about $75,000, for which plans have been drawn by C. A. Ferguson, 63 Arcade, architect.

Manual training equipment will be installed in the two-story and basement high school to be erected by the Board of Trustees, Ohio Soldiers and Sailors Orphans' Home, Xenia, Ohio, estimated to cost $175,000, for which bids will be received on a general contract until July 2. Herbert B. Briggs, Hartman Hotel Building, Columbus, Ohio, is architect.

The Osburn-Abston Co., 610 Monroe Street, Memphis, Tenn., manufacturer of automobile equipment and accessories, has acquired property on Union Street, 136 x 200 ft., for a new plant.

The Golding Sons Co., East Liverpool, Ohio, and Trenton, N. J., operating clay, feldspar and kindred mineral properties, is reported to have plans under consideration for the construction of a grinding plant on a 12-acre tract at Johnson City, Tenn., estimated to cost $100,000 with equipment.

Cleveland

CLEVELAND, June 23.

THE Cleveland Waterworks Department is in the market for about a dozen machine tools. Considerable equipment also will be required for additions to be erected by a local engineering and contracting company for the Continental Gin Co., Birmingham, and the Parkersburg Machine Co., Parkersburg, W. Va. Equipment for the two latter plants will probably be purchased direct by the companies named. Cleveland machinery houses are figuring on the inquiry of the Dayton, Ohio, Board of Education which includes 16 woodworking machines as well as 30 metal working tools previously mentioned.

The market continued very quiet the past week both in volume of sales and new inquiries. The Bourne-Fuller Co., Cleveland, purchased a few special machines for its bolt and nut works. A few scattered orders for single tools came from Detroit automobile plants and one Detroit car builder is figuring on considerable additional equipment aggregating about $75,000. The only railroad inquiry is from the Chicago, Burlington & Quincy for one turret lathe.

The Cleveland Water Works Department will require a number of machine tools for equipping a shop in connection with the Baldwin reservoir filtration plant. The general contract, for which bids have been taken, will include the machine tools, filtration and other equipment and the successful contractor will purchase the machinery. The requirements include one 18-in. lathe, one 4-in. pipe threading machine, one 25-in. vertical drilling machine, a hack saw, wet grinding machine and dry grinding machine and chain hoists and trolleys. The Water Works Department has also asked for bids which will be received June 26 for machinery for the Fairmount pumping station. This list includes a 6-in. pipe threading machine, 3-ft. radial drill, 30-in. x 14 ft. center lathe, 24-in. shaper and an overhead monorail system.

The Parkersburg Machine Co., Parkersburg, W. Va., will require about $30,000 worth of machine shop, forge and pattern shop equipment for its new plant, contract for which has been placed with the H. K. Ferguson Co., Cleveland. The company also plans to erect a gray iron foundry within the next few months and will require molding machines and other foundry equipment.

The Hoffman Heater Co., Lorain, Ohio, contemplates the erection of an addition.

The City Council, Canton, Ohio, has placed contract with the Milbourne Construction Co., local, for its sewage disposal plant, for which pumps and other equipment will be required.

O. H. Sebring, Sebring, Ohio, has purchased the business of the Sheboygan Aluminum Co., Sheboygan, Wis., and will remove it to Sebring.

The Simplex Auto Parts Corporation, Sandusky, Ohio, recently incorporated with a capital stock of $100,000, contemplates the purchase of the plant of the Courrier Motor Co., Sandusky, and will engage in the manufacture of valve stem caps and other automobile parts.

Plans have been filed by the Northern Ohio Traction & Light Co., Northern Ohio Building, Akron, for a substation at its Gorge power plant, estimated to cost $40,000. A high tension oil switch to cost about $10,000 and other equipment is required. A. C. Blinn is vice-president and general manager.

The Standard Sanitary Mfg. Co., Pittsburgh, has filed plans for a two-story addition to its plant at Tiffin, Ohio, estimated to cost $45,000 including equipment.

Pittsburgh

PITTSBURGH, June 23.

PROPERTY at Pennsylvania Avenue and Metropolitan Street, Northside, Pittsburgh, has been purchased by the Williams Gauge Co., 543 Fourth Avenue. It is proposed to erect a machine shop, 76 x 204 ft.

George W. Gast, borough secretary, McKees Rocks, Pa., will take bids until July 7 for furnaces, stack, operating machinery, etc., for a proposed municipal incinerator plant.

George B. Hess, Jeanette, Pa., is having plans drawn for a two-story automobile service, repair and garage building, 72 x 100 ft., estimated to cost $42,000. Schnicke & Brocker, Woolworth Building, Greensburg, Pa., are architects.

The McKinney Mfg. Co., Metropolitan Street, Pittsburgh, manufacturer of hardware, tools, etc., has awarded a general contract to the Henry Shenk Co., 132 Seventh Street, for an addition, estimated to cost $90,000 with equipment.

The Simon White & Sons Co., 35 West Maiden Street, Washington, Pa., is considering plans for a one-story marble cutting and finishing plant, 50 x 90 ft. Hoisting and conveying machinery will be installed.

The Standard Sanitary Mfg. Co., Bessemer Building, Pittsburgh, will soon begin the erection of a four-story works, 90 x 250 ft., on a portion of the site, 180 x 250 ft., lately purchased on Galveston Avenue, Northside, previously held by the Hall Pump Co.

The Overhead Door Co., Lewiston, Pa., will begin operations for the manufacture of patented roll-up doors, frames, etc. The company has additional property and contemplates early extensions. It is capitalized at $110,000 and headed by R. M. Edwards, president; and E. G. Stanley, secretary and treasurer. T. W. Anis will be in charge of production.

Manual training equipment will be installed in the junior high school to be erected at Etna, Pa., estimated to cost $300,000, in which amount bonds have been approved. The Board of Education is in charge.

The Danser Mfg. Co., Weston, W. Va., recently organized, has broken ground for a three-story factory on West Second Street, 50 x 73 ft., for the manufacture of oil well machinery and tools.

The Twelfth Street Garage, Wheeling, W. Va., plans for the erection of a four-story addition to its present service, repair and garage building, estimated to cost $80,000. C. A. Vaden is president.

The Bluestone Mfg. Co., Morristown, Tenn., is planning to rebuild the portion of its furniture manufacturing plant at Graham, W. Va., recently destroyed by fire, with loss estimated at $110,000 including machinery. R. J. Askew is manager.

H. E. and C. E. Hines, 1214 Charleston Avenue, Huntington, W. Va., have tentative plans for a three-story and basement automobile service, repair and garage building, estimated to cost $200,000 with equipment.

The Rogers Construction Co., Corry, Pa., has been awarded contract for an addition to the plant of the United States Radiator Co., Corry, which will double the present capacity. Machinery, including transmission and conveying equipment will be purchased.

The Steel Car Co., Wheeling, W. Va., has been incorporated with a capital of $100,000 by Ira E. Stevens, Fairmont, W. Va.; Robert M. Niven and Henry M. Russell of Wheeling. It is planned to erect a building at an early date for the manufacture of steel cars and equipment.

The Pneumatic Machinery Co., 507 Liberty Avenue, Pittsburgh, is in the market for air compressors.

The Fostoria Glass Co., Moundsville, W. V., has engaged H. O. Swoboda, Inc., consulting engineer, to make improvements to its power plant, including the installation of a new generating unit. Plans and specifications will be completed shortly.

Buffalo

BUFFALO, June 23.

CONSTRUCTION is under way on an addition to the plant of the Hugh Co., Inc., Elk Street, Buffalo, manufacturer of sheet metal products, ventilating and blower systems, etc., to provide about 7000 sq. ft. of additional manufacturing space.

The Board of Public Utilities, City Hall, Jamestown, N. Y., will take bids until July 1 for air-cooling machinery and other equipment for the municipal electric power plant.

Beals, McCarthy & Rogers, Inc., 40-62 Terrace Street, Buffalo, iron and steel products, is taking bids for a four-story storage and distributing plant, 43 x 156 ft., at Elk and Katherine Streets, to be equipped with material-handling, hoisting and other machinery. R. J. Reidpath, Mutual Life Building, is architect.

The Laszle-Tock Co., Grieg, N. Y., is planning for the installation of equipment for the manufacture of fire extinguishers, including sheet-metal working machinery, etc.

The Chamber of Commerce, Lackawanna, N. Y., John A. Toomey, president, is said to have negotiations under way with an automobile manufacturing company, name temporarily withheld, for the construction of a plant on local site.

The Houde Engine Co., Buffalo, has secured permission from the City Council for the erection of its new plant on Winchester Avenue, to manufacture gasoline engines and parts.

Fire, June 15, destroyed a portion of the plant of the Taschenberg Boiler Works, Inc., 43-47 Illinois Street, Buffalo, with loss estimated at $60,000 including equipment. It is planned to rebuild.

The Morrison Metal Products Co., 201 Urban Street, Buffalo, will erect a one-story addition, 35 x 126 ft.

The Delaware, Lackawanna & Western Railroad Co., Hoboken, N. J., has plans for extensions in its locomotive shops and terminal, with new roundhouse, and yard extensions at Binghamton, N. Y., main building, one-story, 104 x 400 ft., estimated to cost $500,000 with equipment.

H. F. Billhardt, 23 North Street, Pulaski, N. Y., operating a general machine and repair shop, plans the installation of additional equipment.

E. R. Miller, Boonville, N. Y., is in the market for a number of dump cars, standard gage, capacity of about 6 cu. yd.

Manual training equipment will be installed in the new high school to be erected at North Tonawanda, N. Y., estimated to cost $375,000, for which bids will be asked in near future on a general contract. Tooker & Marsh, 101 Park Avenue, New York, are architects.

The Walker Bin Co., Penn Yan, N. Y., manufacturer of metal feed bins, etc., contemplates the erection of a two-story addition, 108 x 175 ft.

The Rathbun Mfg. Co., Jamestown, N. Y., manufacturer of electrical products, has leased space in a factory on Steele Street for expansion, and will discontinue operations on Rose Alley.

St. Louis

ST. LOUIS, June 23.

THE Arrow Head Iron Works, Kansas City, Mo., recently formed with a capital of $100,000, is completing plans for the establishment of a plant for general iron and steel products manufacture. Walter B. Richards, 410 West Sixteenth Street, heads the company.

The Common Council, Heavener, Okla., is arranging a special election on July 15 to vote bonds for $125,000, for a waterworks, to include electrically-operated pumping machinery, elevated steel tank and tower, etc., for which plans are being completed by V. V. Long & Co., 1300 Colcord Street, Oklahoma City, Okla., consulting engineers.

The Burnham Co., Glenwood, Ark., operating local sand and gravel properties, is planning the installation of additional equipment, including screens, washing apparatus, conveyors, clam-shell buckets, etc.

The Ford Motor Co., Highland Park, Detroit, will soon begin the erection of superstructure for its assembling plant addition at Oklahoma City, Okla., two-stories, 120 x 135 ft., to cost $150,000. A large part of the machinery installation will be for closed body cars. The C. M. Dunning Construction Co., Oklahoma City, is the general contractor. Albert Kahn, Marquette Building, Detroit, is architect.

The Bimel-Ashcroft Mfg. Co., Poplar Bluff, Mo., plans to rebuild the portion of its woodworking and wood-turning plant recently destroyed by fire, with loss estimated at $65,000 including equipment.

The United Power & Light Corporation, Abilene, Kan., plans for extensions and improvements in its power plant at Hays, Kan., estimated to cost $200,000, with machinery. New automatic power substations will be built at a cost of $80,000.

The Common Council, Charleston, Mo., has preliminary plans for the installation of pumping machinery in connection with waterworks extensions, probably centrifugal type. A steel storage tank and tower will also be purchased, with capacity of 100,000 gal.

The West Missouri Light & Power Co., Humansville, Mo., has closed negotiations for the purchase of the plant of the Sac River Light & Power Co. Plans are under way for extensions and improvements, with the installation of additional equipment estimated to cost $200,000.

The City Council, Washington, Mo., plans the installation of electrically-operated pumping equipment in connection with extensions and improvements in the municipal waterworks. A steel water tank and tower with 250,000 gal. capacity will also be installed. W. B. Rollins & Co., Exchange Building, Kansas City, Mo., are engineers.

The Inland Utilities Co., Hobart, Okla., plans the installation of a local light and power plant, using oil engines for driving electric generators, and accessory equipment. J. E. Wright is engineer in charge.

Milwaukee

MILWAUKEE, June 23.

THE machine-tool trade is receiving at least a slight stimulus of inquiry from a few larger manufacturers who plan replacements of some old equipment. Otherwise the situation remains quiet. In the automotive industries inquiry is slack.

The Chicago, Milwaukee & St. Paul Railway Co., headquarters Chicago, Ill., is completing plans for the construction of a new fireproof grain elevator and warehouse to replace Elevator E, foot of Sixth Street, Milwaukee, which with the exception of concrete grain tanks built in recent years, was destroyed by fire on June 17, causing an estimated loss of $750,000. The new construction will involve an investment of approximately $1,000,000 in building and equipment. C. F. Loweth, Chicago, is chief engineer. W. J. Thiele is general superintendent at Milwaukee.

The Stanek Tool & Mfg. Co., Milwaukee, has been incorporated in Wisconsin with $20,000 capital stock to manufacture tools, dies, fixtures, stampings, hardware specialties and mechanical appliances. The principals are Edward J. Stanek and Arthur J. Seeger, until recently production executives of the General Tool & Mfg. Co., 382 Fourth Street, Milwaukee. Temporary headquarters of the new concern are at 2025 Hamstead Avenue, North Milwaukee, Wis.

A. W. Kousek, Racine, Wis., founder and formerly owner of the Standard Foundry Co., gray iron castings, has plans for a complete new foundry to be erected at once on six acres at Melvin Avenue and the Chicago & Northwestern Railroad tracks at North Racine. Specifications will be ready about July 1, when estimates of the cost will be made public.

The Wisconsin Pump & Mfg. Co., Madison, Wis., has been incorporated with $25,000 capital stock to build and operate a machine shop for the manufacture of gasoline pumps, oil filters and pumps, garage equipment specialties, etc. A site has been selected and work will start about July 15. Walter M. Harks is president; William J. P. Aberg, 301 Gay Building, vice-president, and Ray E. Andrews, secretary-treasurer.

J. G. Jansen, Inc., 1223 Twenty-eighth Street, Milwaukee, is taking bids through George Zagel & Brother, local architects, for a two-story woodworking factory, 45 x 102 ft., at Thirtieth and Center Streets.

The Caldwell Screw Co., Chicago, has opened negotiations with the Kenosha, Wis., Manufacturers' Association with a view of locating a plant in Kenosha for the manufacture of wood screws, lag screws and kindred products. The concern is seeking an existing factory for leasing and intends to employ about 500 at the start. Conrad Shearer is association secretary-manager.

Charles W. Keating, 432 Fremont Avenue, Kenosha, Wis., has purchased for $30,000 the real estate, machine shop and equipment of the bankrupt K. & F. Mfg. Co., 603-

605 Pleasant Street, Kenosha, from the trustee, and the sale has been confirmed. The plant is equipped for manufacturing tools, dies, mechanical appliances, etc., and during the receivership has been kept a going concern. Possession was given June 15.

The Belle City Malleable Iron Co., Racine, Wis., which is pursuing a complete plant replacement and enlargement program involving an investment of $800,000, has started excavations for the second unit of the foundry and broken ground for a new storage building, 100 x 135 ft. The general contractor is Nelson & Co., Inc., Janes Building, Racine. P. M. Adams is plant layout engineer. C. S. Anderson is general manager.

The Board of Education, Burlington, Wis., has let the general contract for a new $350,000 high and vocational training school to the Wisconsin Engineering & Construction Co., Green Bay, Wis. Bids were opened June 16. Ground will be broken at once and it is expected that the board will be ready to ask figures on equipment, tools, etc., about Sept. 1. Miss Nettie E. Karcher is secretary. The architects are Oppenhamer & Obèl, Wausau and Green Bay.

The Wisconsin Metal Products Co., Racine, Wis., is formulating its needs of equipment for its new shop group, 100 x 246 ft., on DeKoven Avenue, work on which is well under way and is expected to be finished about Aug. 1. Taylor Jeliffe is secretary-treasurer.

The Olson Cylinder Grinding Co., Madison, Wis., has changed its corporate title to the T. C. Olson Co., and besides continuing specialized automotive service will manufacture the Olson cylinder grinder for the commercial market. The tool was designed and perfected by T. C. Olson, who continues as president and general manager.

Indiana

INDIANAPOLIS, June 23.

THE Howard Shipbuilding Co., Jeffersonville, Ind., plans the installation of one or more 10-ton traveling cranes at its new one-story machine shop, 55 x 300 ft.

The Cleveland, Cincinnati, Chicago & St. Louis Railway Co., Big Four Station, Cincinnati, is taking bids until July 1 for a water pumping plant at Mount Jackson, Indianapolis. L. C. Paquette is company engineer.

Manual training equipment will be installed in the two-story and basement high school to be erected at Michigan City, Ind., estimated to cost $225,000, for which bids will soon be asked on a general contract. Freyermuth & Maurer, South Bend, Ind., are architects.

The Lafayette Body Co., Indianapolis, manufacturer of automobile bodies, will operate a branch plant at 345 West McCarty Street.

The Bronze Piston Ring Co., Indianapolis, recently organized, will operate a plant at 910 North Illinois Street, where property has been leased.

The Board of Education, South Bend, Ind., will soon begin the erection of a one-story and basement addition to the vocational high school, 36 x 115 ft., to cost $42,000. Additional equipment will be installed. W. M. Elwood, 218 West Jefferson Street, is architect.

The Hess Brothers Machine & Die Works, Jesse Street, Hammond, Ind., has bought 20 acres near the Standard Steel Car Co. plant in that city as a site for a new factory.

The Hammond Brass Foundry, Hammond, Ind., has acquired 4 acres in that city as a site for a new plant.

Gulf States

BIRMINGHAM, June 23.

THE Texas & Pacific Railroad Co., Dallas, Tex., has selected property at Jewella, a suburb of Shreveport, La., as a site for a new locomotive terminal, with engine house, repair shops, boiler works, and general train yard, estimated to cost $1,000,000 with machinery.

The Texas Power & Light Co., Dallas, Tex., is disposing of a bond issue of $1,500,000, a portion of the proceeds to be used for extensions and improvements. A. S. Grenier is vice-president.

The A. C. Foundry Co., Attalla, Ala., recently organized, is planning the erection of a one-story foundry and machine shop, with cost approximating $25,000. J. W. Carroll and J. W. Alford, both of Attalla, are heads.

The Common Council, Miami, Tex., plans to rebuild the portion of the municipal electric light and power plant, recently destroyed by fire. Additional equipment will be installed. An official estimate of loss has not been announced.

The Town Council, Forest Park, Fla., is in the market for equipment for a municipal waterworks, including pumping machinery, water tank and tower, and accessory apparatus. Harold S. Brown is town clerk in charge.

The Milmo Lumber Co., Weatherford, Tex., plans the installation of a steam power house in connection with its proposed local mill. The entire project will involve about $100,000 with machinery.

The Atchison, Topeka & Santa Fe Railway Co., Dallas, Tex., has work in progress on a new rock-crushing plant at Brownwood, Tex., estimated to cost $400,000 with the machinery installation representing about $300,000 of this sum.

The Common Council, Cocoanut Grove, Fla., will soon authorize plans for a municipal waterworks with capacity of 500,000 gal. daily, to include centrifugal pumping machinery, either electric-operated or engine driven; air compressors and accessory equipment, with steel water tank and tower. George A. Main, 14 Baker Street, Daytona, Fla., is consulting engineer.

The Trinity Portland Cement Co., Dallas, Tex., has started the erection of its proposed new mill near Fort Worth, Tex., designed for a capacity of 500,000 bbl. per year, estimated to cost $1,000,000. It will be operated in conjunction with the present plant of the company at Dallas.

The Marine Engine Works & Shipbuilding Corporation, Tarpon Springs, Fla., recently organized, is said to be completing plans for the operation of a local plant. The company will start with a capital of $25,000. C. G. Turmaris, Tarpon Springs, is secretary.

M. L. Worrell, city engineer and manager, Vicksburg, Miss., will take bids until July 21 for a steam boiler and auxiliary equipment for the municipal waterworks.

The Continental Gin Co., Title Guarantee Building, Dallas, Tex., has awarded a general contract to the H. K. Ferguson Co., Euclid Avenue, Cleveland, for the erection of initial units of a new plant at Avondale, Birmingham, consisting of a one-story foundry, 135 x 400 ft., and one-story machine shop, 150 x 300 ft. Other structures will include an assembling works, planing mill, power house, etc., with total cost estimated at $750,000 including equipment. The first buildings will approximate about one-half this sum. A site has been selected at Forty-fifth Street and Fifth Avenue. L. R. Munger is president.

The Central Light & Power Co., Ltd., Amite, La., plans to purchase a 1000 kw. turbo-generator, three-phase, 60-cycle, and accessory equipment.

The City Council, De Ridder, La., plans the installation of electric-operated pumping equipment with capacity of 1,500,000 gal. per day, in connection with extensions in the municipal waterworks. Henry A. Mentz, Magnolia, Miss., is engineer.

The Daniels Ornamental Iron & Wire Corporation, 731 Third Avenue, North, Birmingham, incorporated with capital stock of $36,000, has taken over the business of the Daniels Machine Co., maker of ornamental iron products. President W. H. Daniels states a plant will be built soon and that fabricating work will be done in the company's shops. It will also do machine work and boiler and locomotive repairing.

Arnold F. Glass, 1322 Glen Iris Avenue, South, Birmingham, is in the market for a No. 20 Excelsior quick action, deep throat punch press with motor; also a sensitive drill press for light work, with drilling capacity not over ½-in.

Pacific Coast

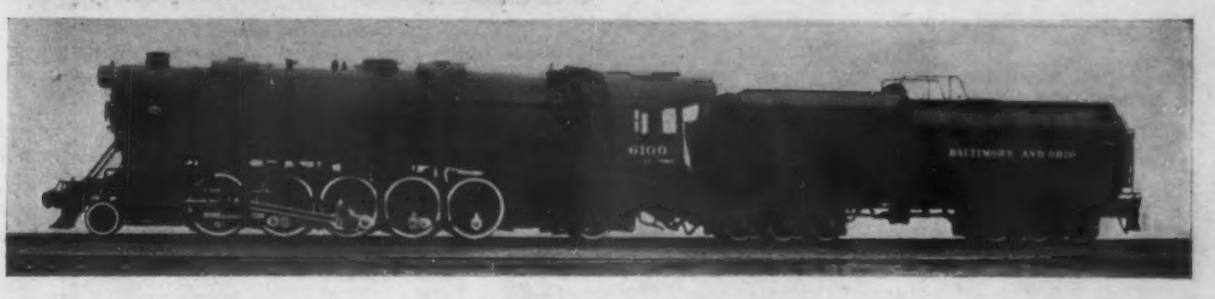
SAN FRANCISCO, June 18.

THE Hartley Brothers Ice & Cold Storage Co., Yuma, Ariz., is planning for extensions, to include the installation of a 20-ton ice-manufacturing machine and auxiliary equipment, estimated to cost $50,000. The company recently removed its plant to this location from Somerton, Cal. Seth Hartley is general manager.

Fire, June 15, destroyed a portion of the mills of the Willamette Valley Lumber Co., Dallas, Ore., with loss estimated at $150,000 including machinery, the majority electrically-operated. Preliminary plans are under way for rebuilding.

The John A. Roebling's Sons Co., Trenton, N. J., has purchased land at Sixteenth, Seventeenth, De Haro and Carolina Streets, San Francisco, 200 x 400 ft., and plans the construction of a factory branch and distributing plant for its cable and wire rope manufacturing business. It is estimated to cost $250,000 including equipment. Plans will be prepared by the engineering department at Trenton.

A steam-operated electric power plant will be constructed at the proposed training school for boys to be erected at Woodburn, Ore., for which plans are being drawn by W. C. Knighton, United States Bank Building, Portland, Ore., architect. It will be provided with manual training equipment. The entire project will involve about $175.000.



"DIGNITY and Impudence" Are Represented by Locomotives of Such Contrasting Size. The large one, with tender, weighs 730,000 lb.; the other, 9900 lb. Engine wheel bases are 43 ft. and 2½ ft. Tank capacities are 15,800 gal. and 80 gal. of water. Heating surfaces are 5270 and 67½ sq. ft. These are said to be the largest and the smallest locomotives built at the Eddystone plant of the Baldwin Locomotive Works.

The Humboldt Lumber & Building Co., 233 G Street, Eureka, Cal., plans the construction of a mill, comprising planing mill, saw mill, and general woodworking and finishing works to cost $90,000 with equipment. The machinery will be electrically-operated. D. H. McFarlan is general manager.

The Grays Harbor Railway & Light Co., Aberdeen, Wash., will soon break ground for a new steam-operated electric generating plant near its present station between Aberdeen and Hoquiam, Wash. It will be constructed by day labor under the direction of Sanderson & Porter, Nevada Bank Building, San Francisco, engineers, and is estimated to cost $450,000 with machinery.

The Pacific Stove & Foundry Co., 1102 Idaho Street, Seattle, has awarded a general contract to W. J. Symonds, 4568 Thirteenth Street, S. W., for a one-story foundry.

The Atchison, Topeka & Santa Fe Railway Co., Los Angeles, has awarded a general contract to the Lynch Construction Co., Central Building, for two additions to its locomotive shops at San Bernardino, Cal., 100 x 194 ft., and 45 x 180 ft., respectively, estimated to cost $60,000. One of the buildings will be used as a flue shop.

The Santa Cruz Station of Poultry Producers of Central California, Santa Cruz, will soon begin the construction of a one-story ice and pre-cooling plant, estimated to cost $45,000 including equipment.

The Green Epidosite Industrial Corporation, 209 Bartlett Building, Los Angeles, operating green marble properties in the vicinity of Victorville, Cal., capitalized at $250,000, is planning the erection of a local cutting and polishing plant at Hawthorne to cost $45,000. Hoisting and conveying machinery will be installed. George Reid is president.

South Atlantic States

BALTIMORE, June 23.

BIDS will be received by the general purchasing officer, Panama Canal, Washington, until July 9 for wrecking cranes, pump, wire rope, screws, nuts, steel tapes, backsaw filing and setting machines, and other miscellaneous equipment, Panama Circular 1616.

The Maryland Penitentiary, Baltimore, Col. Claude B. Sweezy, warden, will soon lay foundations for a one-story foundry, 80 x 240 ft. Theodore W. Peitsch, American Building, is architect.

The Parker Coal Co., McGee and Cedar Streets, Greensboro, N. C., recently formed with a capital of $50,000 is planning to purchase unloading, conveying and other coal-handling equipment at its distributing plant, including a portable unloader. J. A. Parker, 705 Walker Avenue, is secretary and general manager.

The Potomac Edison Co., Cumberland, Md., is disposing of a bond issue of $1,000,000, a portion of the proceeds to be used for extensions and improvements.

The Wilson-Hock Co., City Point, Va., machinery dealer, is in the market for a 20 to 25 ton locomotive crane, standard gage, 8 wheels, 40 to 45 ft. boom, with double drums for bucket; one high speed multiple drill press, 4 or 5 spindles; one motor-driven hoist for 4-ton capacity car hauling service, 220 volts, three-phase, complete with starter, etc.; one 400 kw. electric alternator, three-phase, 60-cycle, 550 volts, belt-driven; one 26-in. lathe, 14-ft. bed, to handle rolls about 18 in. diameter, 10 ft. long, and a number of motors, 150 and 200 hp. induction type, three-phase, 60-cycle, 2200 volts, one slip ring, or squirrel cage.

The Tidewater Power Co., Wilmington, N. C., is disposing of a bond issue of $1,070,500, a portion of the proceeds to be used for extensions in power plants and system.

The North State Lumber Co., P. O. Box 464, Charleston, S. C., is planning to purchase a 10 to 15 ton locomotove crane, 8-wheel.

The Oles Envelope Co., Baltimore, has awarded a general contract to the H. K. Ferguson Co., Euclid Avenue, Cleveland, for a one-story plant, 100 x 200 ft., estimated to cost $30,000 with equipment.

R. E. Sugga, 1516 Healey Building, Atlanta, Ga., plans to purchase an air compressor, 2000 to 3000 cu. ft. displacement, steam, electric or belt operated; also one 12 to 15-ton locomotive crane, 50-ft. boom, standard gage, 8-wheel type.

The supervising architect, Treasury Department, Washington, will take bids until July 9 for one ice-making and refrigerating plant for installation at Savannah, Ga.

The Trout-Wilkie Lumber Co., Forest City, N. C., has inquiries out for a water turbine wheel and an electric generator. C. A. Wilkie is secretary.

The Virginia-Northern Power Co., Warrenton, Va., recently organized to take over and consolidate electric power properties and ice-manufacturing plants at Warrenton, Culpeper and Orange, Va., has plans for enlargements in the power plants at the last two noted places and the installation of additional equipment. M. J. O'Connell is general manager.

The Standard Gas Products Co., Atlanta, Ga., manufacturer of commercial oxygen, gases, etc., plans to rebuild the portion of its works at Oakland, Ga., destroyed by fire June 14, with total loss estimated at $75,000.

The Matz Coal Co., Raven, Va., is said to be planning the construction of a new tipple to replace the structure recently destroyed by fire.

Manual training equipment will be installed in the proposed new junior high school to be erected at Lynchburg, Va., estimated to cost $300,000, for which it is expected to begin foundations in July. Heard & Chesterman, Peoples National Bank Building, are architects.

LIBRARY
WEST VIRGINIA UNIVERSITY

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.34c.
Swedish charcoal iron bars, base	6.75c. to 7.00c.
Soft steel bars, base price	3.34c.
Hoops, base price	4.59c.
Bands, base price	4.09c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.44c.
Channels, angles and tees under 3 in. x ¼ in., base	3.34c.
Steel plates, ¼ in. and heavier	3.44c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.35c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.60c.
Toe-calk, ½ x ⅝ in. and larger	4.30c.
Cold-rolled strip, soft and quarter hard	7.50c. to 8.50c.
Open-hearth, spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds	4.40c.
Square, flats and hex	4.90c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	4.14c.
No. 12	4.19c.
No. 14	4.24c.
No. 16	4.34c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.45c. to 4.70c.	.....
Nos. 22 and 24	4.60c. to 4.85c.	5.10c.
No. 26	4.65c. to 4.90c.	5.15c.
No. 28*	4.75c. to 5.00c.	5.25c.
No. 30	4.95c. to 5.20c.	.....

Galvanized

	Per Lb.
No. 14	4.85c. to 5.10c.
No. 16	5.00c. to 5.25c.
Nos. 18 and 20	5.15c. to 5.40c.
Nos. 22 and 24	5.30c. to 5.55c.
No. 26	5.45c. to 5.70c.
No. 28*	5.75c. to 6.00c.
No. 30	6.25c. to 6.50c.

*No. 28 and lighter, 36 in. wide, 20c. higher.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
⅛ in. Butt	—41	—24	⅛ in. Butt	— 4	+19
¼ in. Butt	—46	—32	¼ in. Butt	—11	+ 9
1-3 in. Butt	—48	—34	1-1½ in. Butt.	—14	+ 6
2½-6 in. Lap.	—44	—30	2 in. Lap	— 5	+14
7-8 in. Lap	—41	—11	2½-6 in. Lap.	— 9	+ 9
9-12 in. Lap	—34	— 6	7-12 in. Lap.	— 3	+16

Bolts and Screws

Machine bolts, cut thread,
50 to 60 per cent off list

Carriage bolts, cut thread,
40 to 40, 10 and 10 per cent off list

Coach screws, 50 and 10 to 60 per cent off list

Wood screws, flat head iron,
75, 20 and 10 per cent off list

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c. to 4.50c.
Annealed soft	4.50c. to 4.75c.
Galvanized annealed	5.15c. to 5.40c.
Coppered basic	5.15c. to 5.40c.
Tinned soft Bessemer	6.15c. to 6.40c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	16¼c. to 17¼c.
High brass wire	16¾c. to 17¾c.
Brass rods	14 c. to 15 c.
Brass tube, brazed	24¼c. to 25¼c.
Brass tube, seamless	20½c. to 21½c.
Copper tube, seamless	21¾c. to 22¾c.

Copper Sheets

Sheet copper, hot rolled, 19½c. to 20c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin Grade "AAA" Charcoal 14x20	Bright Tin Grade "A" Charcoal 14x20	Coke—14 x 20	Prime	Seconds
		80 lb.	$6.55	$6.30
		90 lb.	6.65	6.40
		100 lb.	6.75	6.50
IC	$11.75	IC	7.00	6.75
IX	13.25	IX	8.25	8.00
IXX	14.50	IXX	9.50	9.25
IXXX	15.50	IXXX	10.75	10.50
IXXXX	16.50	IXXXX	12.00	10.75

Terne Plates

8 lb. coating, 14 x 20

100 lb	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	45c.
Bar	48c. to 53c.

Copper

Lake ingot	16 c.
Electrolytic	15½c.
Casting	14½c.

Spelter and Sheet Zinc

Western Spelter	7½c.
Sheet zinc, No. 9 base, casks	10½c. open 11¼c.

Lead and Solder*

American pig lead	8½c. to 9c.
Bar lead	11c. to 12c.
Solder, ½ and ½ guaranteed	33¼c.
No. 1 solder	31¼c.
Refined solder	27¼c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	10½c. to 11c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	36c.

Old Metals

Business is quiet and values generally unchanged. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy crucible	10.75
Copper, heavy wire	10.25
Copper, light bottoms	8.50
Brass, heavy	6.00
Brass, light	5.00
Heavy machine composition	7.75
No. 1 yellow brass turnings	6.50
No. 1 red brass or composition turnings	7.50
Lead, heavy	5.75
Lead, tea	4.25
Zinc	3.50
Cast aluminum	14.50
Sheet aluminum	14.50

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